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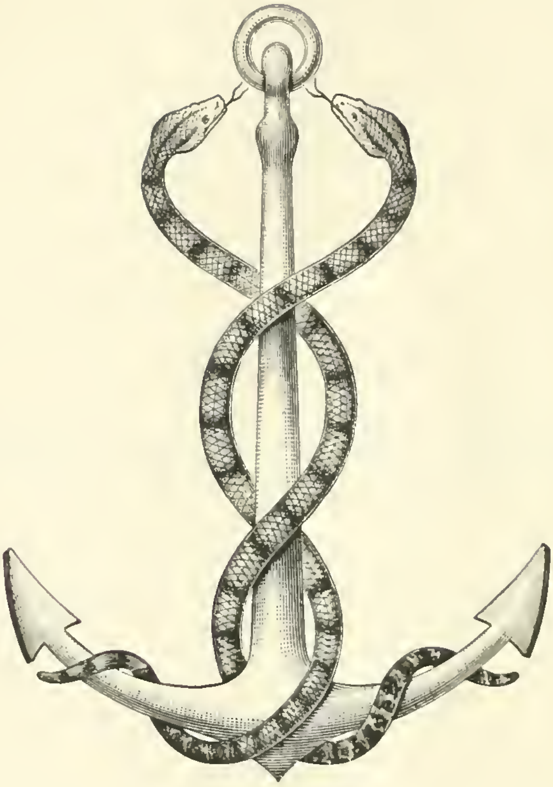
THE

EDINBURGH MEDICAL JOURNAL



NUNQUAM ALIUD NATURA, ALIUD SAPIENTIA DICIT.

THE EDINBURGH MEDICAL JOURNAL

EDITED BY

G. A. GIBSON, M.D., F.R.C.P.Ed.

ALEXIS THOMSON, M.D., F.R.C.S.Ed.

AND

HARVEY LITTLEJOHN, M.B., F.R.C.S.Ed.

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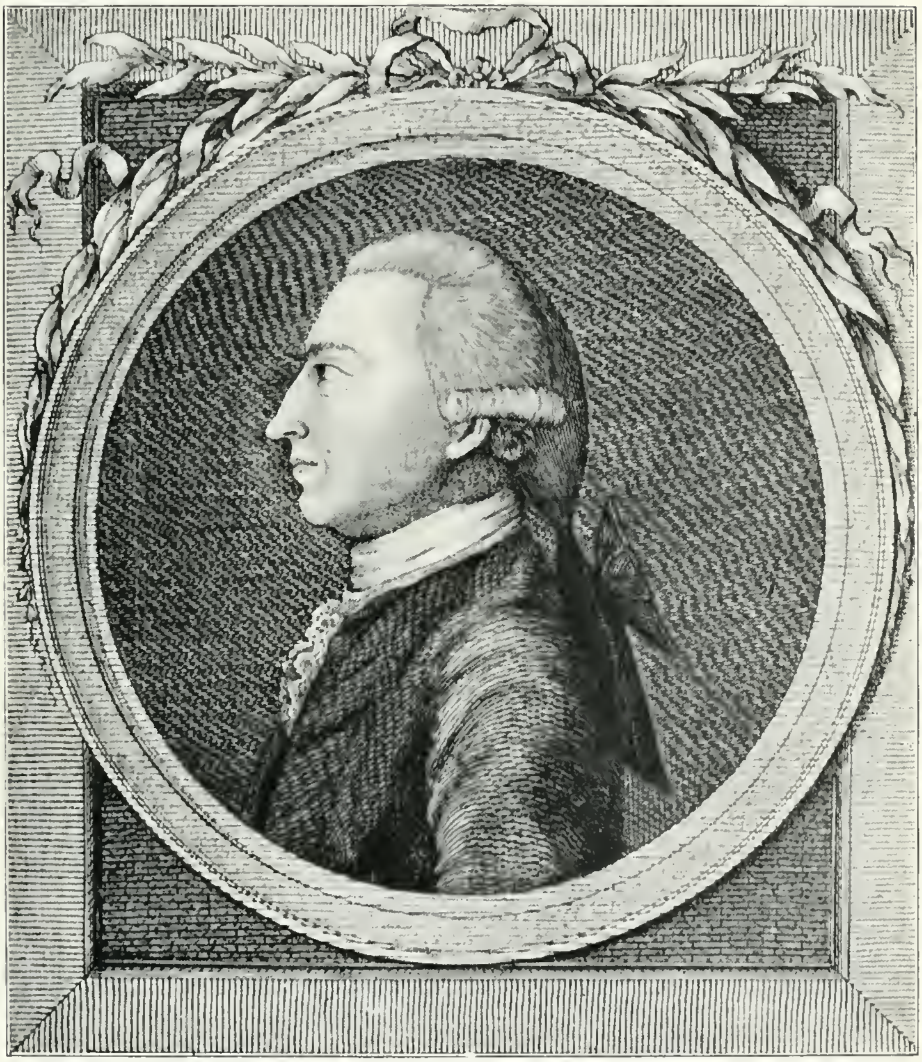
Archibald Constable.

From the original painting by Sir Henry Raeburn in the possession of his grandson.



Andrew Duncan, Junior.

From a line engraving in the possession of the Royal College of Physicians, Edinburgh.

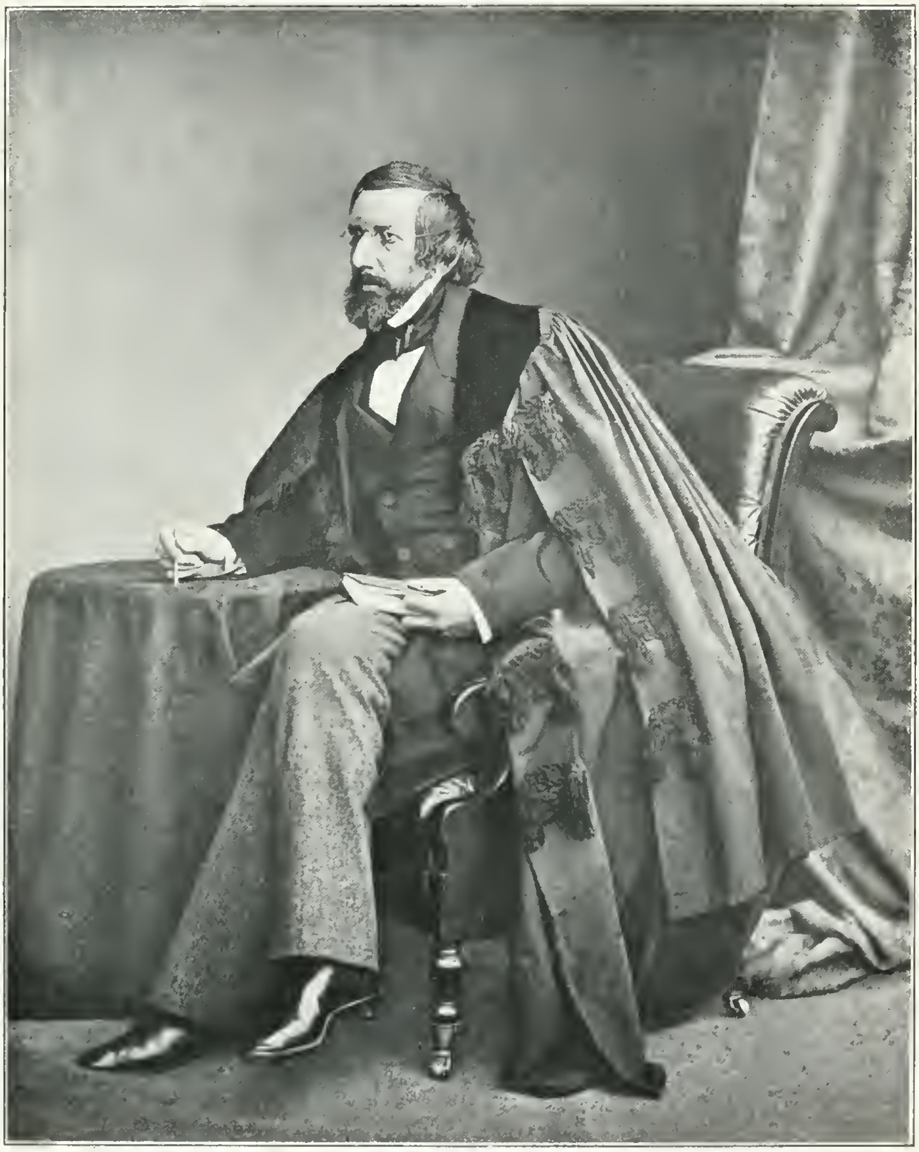
Sir Robert Christison.

From the original painting by Sir John Watson Gordon, in the possession of the Royal College of Physicians, Edinburgh.

William Seller.

From the original painting by Sir John Watson Gordon, in the possession of the Royal College of Physicians, Edinburgh.

John Rose Cormack.
From a photograph by Walery, Paris.



George Edward Day.

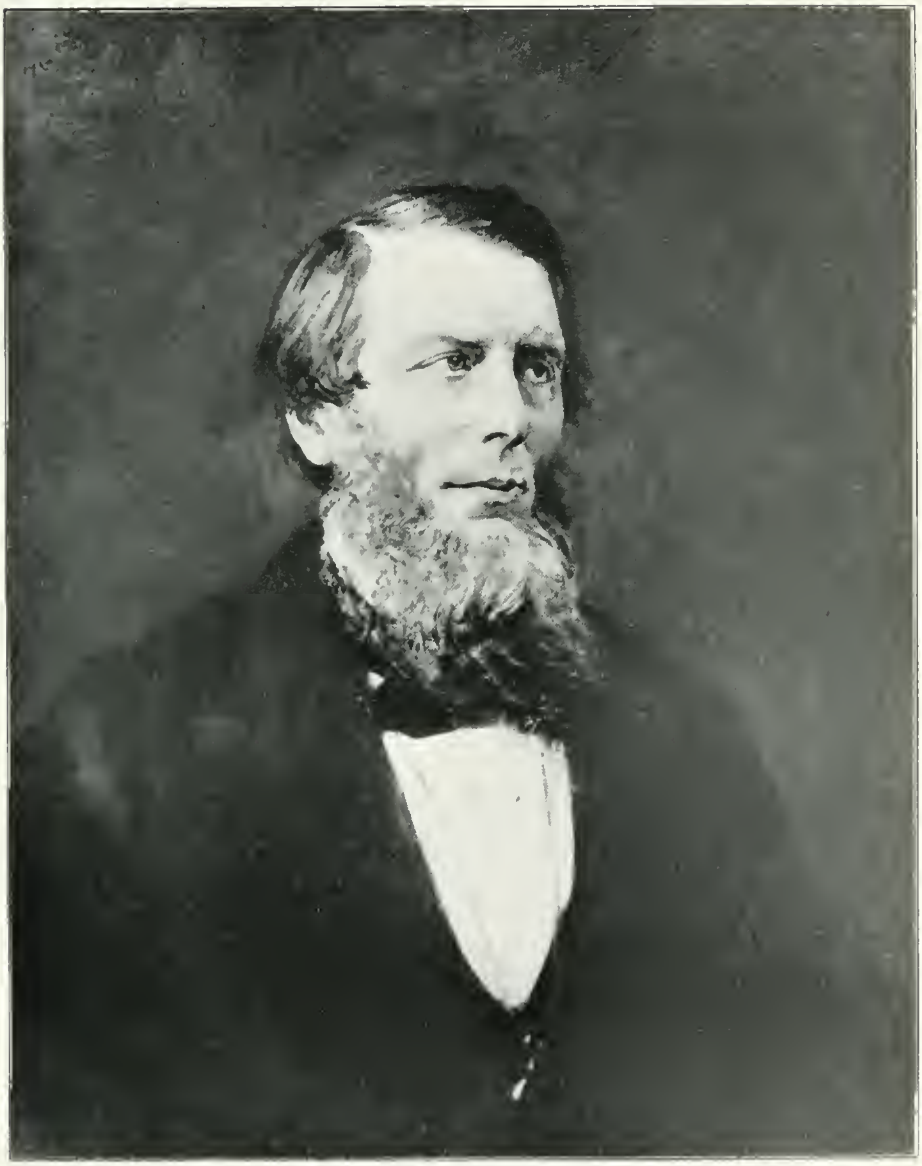
From a photograph by Rodgers, St. Andrews.

Alexander Fleming.

From a photograph in the possession of H. H. Fletcher, Esq.

Sir William Tennant Gairdner.

From a photogravure of the original picture by Sir George Reid.

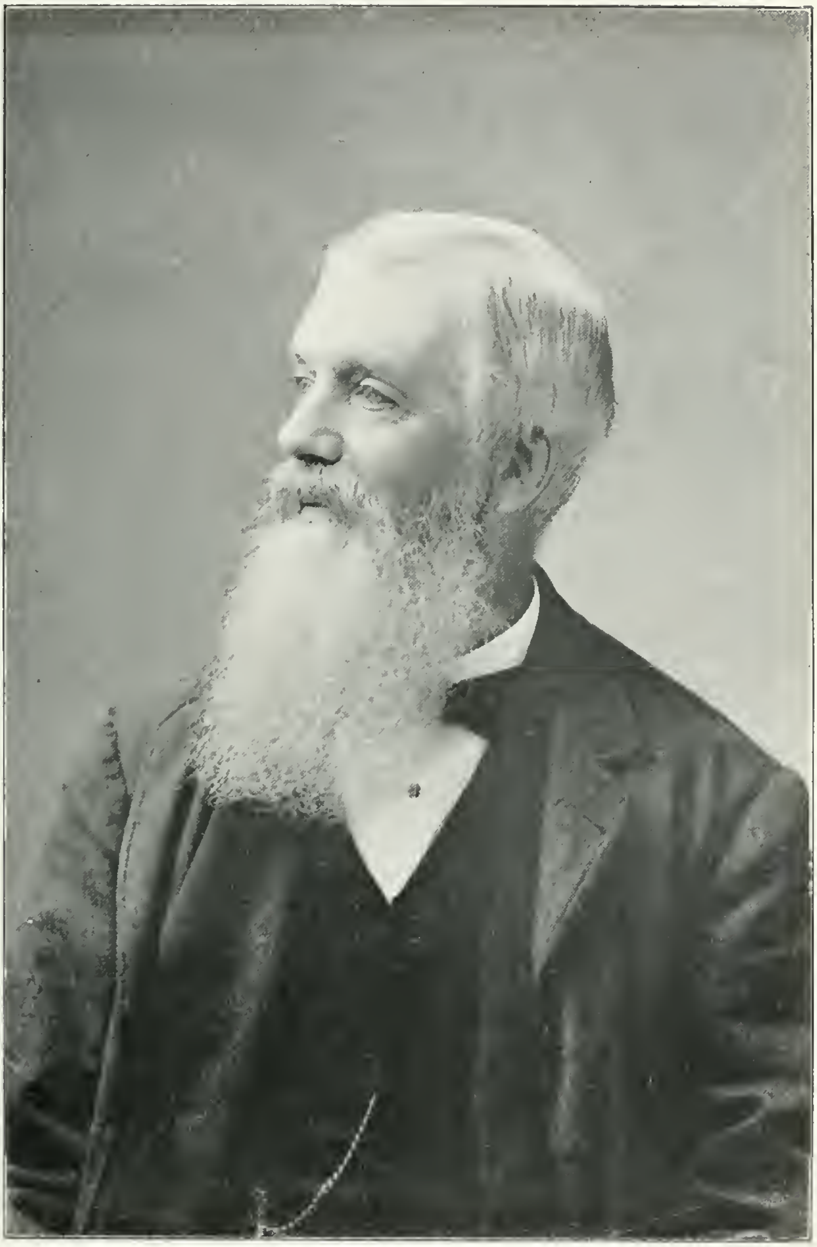


John Hughes Bennett.

From the original painting by Henry Kerr, in the possession of the Royal College of Physicians, Edinburgh.

SIR HENRY DUNCAN LITTLEJOHN.
From a photograph by Lavender, Bromley.

DANIEL RUTHERFORD HALDANE.
From a photograph by Tunny, Edinburgh.



George William Balfour.
From a photograph by Ayton, Edinburgh.

Joseph Bell.

From a photograph by Moffat, Edinburgh.

EDINBURGH MEDICAL JOURNAL.

CENTENARY NUMBER.

INTRODUCTORY.

By the EDITORS.

FROM time to time it is well to cast the eye backwards upon the past, in order to discern evidences of the ebb and flow of thought. In a busy age, the actors on the boards are so engrossed with the play then forward as to think but little of what has gone before. Thus it happens that, in the mind of those who are doing the work of the world, there is a tendency to forget the course of the development of knowledge. The natural result is that, working in ignorance of the labours and opinions of the past, the investigator of the present is apt to lose himself or waste his energies in the rediscovery of what has often been the discarded property of a former age. As a matter of practical usefulness, to put it on the lowest basis, some acquaintance with the history of medicine is necessary in order to obviate such a tendency to error. Looking at the subject from a higher level and with broader views, the study of medical history presents matters of the deepest interest. "It is neither an affront to any man's understanding," says Freind,[1] "nor a cramp to his genius, to say, that both the one and the other may be usefully employ'd, and happily improv'd, in searching and examining into the opinions and methods of those who lived before him, especially considering that no one is tied up from judging for himself, or obliged to give in to the notions of any author, any further than he finds them agreeable to reason, and reducible to practice." The growth and decay of knowledge, the rise and fall of opinions, the birth and death of systems—such provide subjects for reflection of no ordinary kind, and lead the student of medicine to recognise that "thro' the ages one increasing purpose runs."

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[1] "The History of Physick from the time of Galen to the beginning of the Sixteenth Century," Third Edition, London, 1726. Part I., p. 303.

It has too often been the custom to deride the period immediately preceding the nineteenth century as shallow—even barren. Although there is undoubtedly some reason for such an opinion, seeing that much of the thought in that age was superficial in character, such a sweeping generalisation would nevertheless be far from the truth. It cannot be forgotten that the eighteenth century was the epoch when David Hume inaugurated modern philosophy, and Adam Smith introduced political economy; that it watched the rise of the enlightened statesmanship of Pitt and the generous philanthropy of Wilberforce; and that, in material advances, it saw the discoveries of Watt and of Symington. Great names at the same time graced the literature of our country. In poetry, Thomson, Gray, Cowper, and Burns brought the minds of men back to nature; at the hands of Goldsmith and Sheridan the drama was enriched by plays which are still our delight; historical research took a new departure with the labours of Robertson and Gibbon; while modern fiction began with Richardson and Fielding. Such achievements would render any age illustrious. On turning to the medical sciences, we find a record of large advances. In the domain of chemistry, Priestley and Cavendish laid the foundations of modern experimental methods. In the province of physics, Halley, La Place, Galvani, and Black observed and explained numerous new phenomena, celestial as well as terrestrial. Buffon, Cuvier, and Linnæus laid the foundation of new biological sciences. Portal and Senac, Monro and Hunter, made enormous strides in human and comparative anatomy. Haller and Priestley enriched the subject of physiology by investigations of the most important kind. Morgagni and Baillie undoubtedly created a new science by their pathological researches. In the walks of medicine, Mead, Pringle, de Haën, Fothergill, Stoll, Heberden, Cullen, Tissot, and Currie made great additions to the knowledge of the time. In the field of surgery, Peyronie, Petit, Desault, Scarpa, Gimbernat, the Bells, Hunter, Cheselden, White, and Blizard must be remembered to all time for the great advances which were due to their exertions. In the province of obstetrics, Smellie and Hunter, Astruc and Baudelocque, Röderer and Stein, rendered the greatest services to an art then in its infancy. At the same time, it must be remembered that Bichat was hard at work on the subject with which his name will always be identified, that Auenbrugger had brought before the world a method which was to be the pioneer in a new departure, and that Jenner had inaugurated protective vaccination—the forerunner of modern work on immunity. These facts alone are sufficient to show that the torch of learning was not altogether smouldering during the eighteenth century. But in spite of the memorable achievements which have been referred to, medical thought and opinion were still to a considerable extent under the influence of various systems, such as those of Cullen, Brown, and Rasori. Notwithstanding the subjection of the professional mind to the trammels of such systems, it is clear that, during the epoch with which these remarks are concerned, dogmatism was on the wane equally in philosophy and science. The scepticism of Hume cleared the way for the criticism of Kant, and the inquiries of the scientific men already mentioned prepared for the advances of modern science.

Amongst the features of the eighteenth century must be noted the origin of periodic scientific and medical literature. At first the contributions to medical science occurred at rare intervals; sometimes annually, sometimes less frequently. Amongst such publications may be mentioned:—*Medical Observations and Inquiries by a Society of Physicians in London*, which appeared from 1757 to 1784; *Medical Transactions, published by the College of Physicians in London*, from 1768 to 1785; *The Memoirs of the Medical Society of London*, from 1787 to 1805; *The Medical Spectator*, from 1791 to 1793; and *The Annals of Medicine*, from 1796 to 1804. These, and other publications of less moment, were undoubtedly the origin of the periodical literature of medicine in this country.

During the early years of last century, several suggestions seem to have been considered for the establishment of a journal or review which would appear more frequently than any of the publications which have been referred to. Both in London and Edinburgh proposals of the kind were entertained, but it was in the northern capital that effective steps were taken.

Edinburgh was remarkable at that time for the number of distinguished men then casting a halo of renown over the city by the lustre of their achievements in science and medicine. Ferguson, Playfair, Jamieson, Rutherford, the Homes, Gregory, Hope, the elder Duncan, and Monro, secundus, then adorned the University, while outside of the Senatus were John Barclay, Charles, George, and Benjamin Bell, William Newbigging, John Thomson, John Cheyne, Alexander Morison, James Hamilton, John Abercromby, the younger Andrew Duncan, Alexander and Andrew Wood, and many others who were prominent in the world of medicine. Amongst such men it could not be a difficult matter to bring out a medical journal; all that was required was an impetus to action. We learn from the memorial of Archibald Constable[1] that careful preparations had been made during the year 1804 for the publication of a medical journal, and it is clear that the chief burden of the enterprise was borne by the younger Andrew Duncan. Under his editorship the first number of *The Edinburgh Medical and Surgical Journal* appeared as a quarterly magazine in January 1805. The advertisement sets forth the intention of the founders, and is characterised by tolerant views and catholic aims. Evidently there was nothing like medical Chauvinism—to use Osler's phrase[1]—amongst the brilliant galaxy of men in whose midst the Journal took its rise. Contributions from each division of the United Kingdom, recently founded, were promised, and articles from the Greater Britain beyond the seas were evidently expected. To these large-hearted aims the Journal remained faithful during the half century of its independent existence, and it contained contributions by celebrated men from many quarters of the globe.

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[1] "Archibald Constable and his Literary Correspondents: A Memorial by his Son, Thomas Constable," Edinburgh, 1873, vol. i. p. 49 and p. 60.

During the first fifteen years, Andrew Duncan, junior, acted as sole editor, but in 1820 Robert Christison and David Craigie were associated with him. This arrangement existed until 1827, when Duncan resigned the control of the Journal, and Christison and Craigie became joint-editors. Five years later the former demitted office, and Craigie remained sole editor from 1832 to 1853, when he was succeeded by William Seller, who had been closely associated with him for some years in the conduct of the Journal.

Towards the end of the year 1840 a powerful committee announced the intention of publishing a monthly Journal, and in January 1841 *The Edinburgh Monthly Journal of Medical Science* made its appearance, under the editorship of John Rose Cormack. Under the "Medical News" in the first number there are set forth the reasons for the appearance of the Journal, which, in respect of there being then no monthly medical journal in the British Islands, was intended to supply a want. In September 1841 its name was altered to *The London and Edinburgh Monthly Journal of Medical Science*, and this continued to be the title of the Journal until January 1846, when it became simply *The Monthly Journal of Medical Science*. Two years and a half later, Cormack retired, and the volume beginning with July 1848 bore the names as joint-editors of George Edward Day, Alexander Fleming, and William Tennant Gairdner. On their resignation in 1852, John Hughes Bennett assumed the editorial chair, and reigned over the Journal until its independent career came to an end.

In the April number of 1855, an announcement was made by the editor that *The Edinburgh Medical and Surgical Journal* would for the future be amalgamated with its younger monthly rival, and in July of that year *The Edinburgh Medical Journal* made its first appearance as the successor of both the periodicals. The first editor of the united Journal was Henry Duncan Littlejohn, who, as the veteran Professor of Medical Jurisprudence, is happily still with us in perennial youth. The recent history of *The Edinburgh Medical Journal* must be fresh in the memory of every one, and it need only be said that after some years Sir Henry resigned the conduct of the Journal into the hands of Daniel Rutherford Haldane: that he, in turn, was followed by

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[1] "Æquanimitas, with other Addresses to Medical Students, Nurses, and Practitioners of Medicine," London, 1904, p. 279.

George William Balfour, who presided over its destinies for several years, and that the editorial chair was then filled by Joseph Bell, who retained control until the present management began in January 1897.

It is at once a pious duty and a pleasant privilege to say a few words about the previous editors of *The Edinburgh Medical Journal* and its two predecessors.

Andrew Duncan, junior (b. 1773, d. 1832), was Professor of Medical Jurisprudence in the University of Edinburgh, and Physician to the Royal Infirmary. He made some important contributions to Morbid Anatomy and Clinical Medicine, but his most important work lay in the subject of Materia Medica.

Sir Robert Christison, Bart. (b. 1797, d. 1882), was Professor of Medical Jurisprudence in the University, and later of Materia Medica and Clinical Medicine. He was undoubtedly the most distinguished toxicologist of his age. His "Treatise on Poisons" had a world-wide celebrity. His work on "Granular Degeneration of the Kidneys" was a pioneer in its subject, while his "Dispensatory" obtained an enormous circulation.

David Craigie (b. 1793, d. 1866) was one of the physicians to the Royal Infirmary. As will be mentioned in one of the special articles in this number, he did some excellent work in connection with the growing subject of Pathology, and he was also the author of two well-known works on Medicine.

William Seller (b. 1798, d. 1869) was one of the most popular members of the medical profession in Edinburgh in his age. He was possessed of such an admirable literary style, that it is unfortunate so much of his writing was anonymous. The chief works which bore his name were contributions to Clinical Medicine and Materia Medica.

Sir John Rose Cormack (b. 1815, d. 1882) was at one time Physician to the Royal Infirmary, and at a later period Physician to the British Hospital in Paris. He was well known as the translator of Trousseau's "Clinical Medicine," but he also wrote original articles on different medical subjects. He particularly distinguished himself during the siege of Paris in the Franco-German War, and received many honours for his humanitarian services.

George Edward Day (b. 1815, d. 1872) was Professor of Medicine in the University of St. Andrews. He was a most learned physician and an indefatigable contributor to some of the encyclopaedias, but he also published some excellent papers, especially on the Diseases of Advanced Life.

Alexander Fleming (b. 1823, d. 1875) settled originally in Edinburgh, but eventually became Physician to the Queen's Hospital in Birmingham. He was well known as a writer on Materia Medica, and his researches on Aconite are classical.

Sir William Tennant Gairdner, K.C.B. (b. 1824), was Physician to the Royal Infirmary of Edinburgh, but afterwards became Professor of Practice of Medicine in the University of Glasgow, and Physician successively to the Royal and Western Infirmaries of that city. During the last four years he has enjoyed honourable repose on the conclusion of his labours. He has undoubtedly contributed more than any one now living to the physical diagnosis of disease. He has enriched medicine by many most valuable contributions, amongst which may be mentioned that classic, "Clinical Medicine," and he has shown that it is possible to expound medical subjects with philosophic breadth and literary grace.

John Hughes Bennett (b. 1812, d. 1875) was Professor of the Institutes of Medicine and of Clinical Medicine in the University of Edinburgh, and Physician to the Royal Infirmary. More than any one else in this country he contributed to the use of the microscope in pathology and medicine, and was one of the most eminent teachers of clinical medicine that Edinburgh ever possessed. He was the author of many standard works on physiology, pathology, and medicine, too numerous to mention.

Sir Henry Duncan Littlejohn (b. 1825) is universally known as Professor of Medical Jurisprudence in the University, as Medical Officer of Health for the City of Edinburgh, and as Medical Adviser to the Crown for Scotland. As a teacher of his subject he is unrivalled, and to its literature he has made many scientific contributions, while he has been the author of innumerable reports on sanitary subjects. It is not too much to say that he has laid the country at large under a debt of gratitude by his zeal for the welfare of the people.

Daniel Rutherford Haldane (b. 1824, d. 1887) was Physician to the Royal Infirmary of Edinburgh, and a popular teacher of medicine both in the lecture-room and at the bedside. Much of his energy was spent in medical politics, but he left behind him some pathological and clinical observations of real value.

George William Balfour (b. 1823, d. 1903) was Physician to the Royal Infirmary of Edinburgh. He made most important contributions to the diagnosis of affections of the chest, especially of the heart, while in the therapeutics of the circulation he undoubtedly made greater advances than any physician of his age. His "Introduction to the Study of Clinical Medicine," his "Clinical Lectures on Diseases of the Heart and Aorta," and his "Senile Heart," are masterpieces, and show that a finished style of diction is not incompatible with medical writing.

Joseph Bell (b. 1837) was Surgeon to the Royal Infirmary of Edinburgh, and in that capacity was a popular teacher of clinical surgery. He was one of the first surgeons in this country to grasp the importance of Lord Lister's theory and practice, and amongst numerous contributions to his subject, some of those on antiseptic surgery show how ready he was to welcome any advance.

His "Manual of the Operations of Surgery" has for long been one of the most popular works in practical surgery.

To the first publisher of the Journal it is fitting that a tribute should be paid. The mention of Archibald Constable (b. 1774, d. 1827), the "Napoleon of the Press," as he is termed in Lockhart's "Life of Scott,"[1] at once arouses a flood of memories. The founder of one of the greatest publishing houses which the world has ever seen, he was closely associated with most of the literary giants of his age—Thomas Campbell, John Leyden, Robert Jamieson, Dugald Stewart, Patrick Fraser Tytler, Lord Jeffrey, Lord Brougham, Francis Horner, Macvey Napier, Henry Mackenzie, James Hogg, John Playfair, and Sir John Leslie, to mention but a few of those with whom he was on terms of friendship. But above all there stands out clearly the fact of his intimate ties with Sir Walter Scott in good and evil times. We may close this subject by a quotation from Lord Cockburn:[2]—

"To Archibald Constable, the publisher of the *Edinburgh Review*, the literature of Scotland has been more indebted than to any other bookseller. Till he appeared, our publishing trade was at nearly the lowest ebb, partly because there was neither population nor independence to produce or to require a vigorous publisher, and partly because the publishers we had were too spiritless even for their position."

Of the advances which have been made in medical knowledge and in the ancillary sciences since the foundation of the Journal, the following papers in this number of the Journal will fully tell. In this introductory sketch, only a few general references to the main lines of progress can be made.

In the science of Physics, both as regards its scientific and practical aspects, vast advances have been made by Joule, Helmholtz, Faraday, Wollaston, Kirchhoff, Leslie, Kelvin, Leverrier, and Tait. The subject of Chemistry, by the labours of Berzelius, Hoffmann, Bunsen, Dalton, Davy, Marsh, Graham, Young, and Gay Lussac, has been greatly extended. The realm of Botany has assumed new boundaries from the labours of Lamarck, Banks, de Candolle, Brown, and Hooker. To Zoology enormous contributions have been made by Owen, Huxley, Darwin, and Haeckel. In Anatomy, the Bells, Meckel, St. Hilaire, Scarpa, Breschet, Goodsir, Turner, His, Braune, Cunningham, and Edinger have absolutely revolutionised the branch of knowledge which Barclay thought incapable of further advances. In Physiology, Sir Charles Bell, Marshall Hall, Legallois, Magendie, Flourens, Bernard, Waller, the Webers, Reid, Müller, Remak, Sanderson, Schäfer, Roy, and Paton have absolutely remodelled the subject. In Pathology, Virchow, Rokitansky, Recklinghausen, Cornil, Ranvier, Cohnheim, Wilks, Paget, Ziegler, Thoma, Hamilton, and

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[1] Vol. vi. p. 114, Edinburgh, 1837.

[2] "Memorials of his Time," Edinburgh, 1856, p. 167.

Greenfield stand out prominently. In the realm of Medicine, Laennec, Piorry, Louis, Corrigan, Andral, Forbes, Hope, Skoda, Willan, Bateman, Abercromby, Trousseau, Alison, Romberg, Niemeyer, Graves, Stokes, Laycock, Murchison, Gairdner, Balfour, Hughlings Jackson, Ferrier, Charcot, and Manson have each, in their several departments, enriched this subject by the most far-reaching observations and investigations. Liston, Syme, Astley Cooper, Langenbeck, Volkmann, Billroth, Péan, Pirogoff, Lister, Kocher, Ollier, Bergmann, Durante, Bigelow, Warren, and Gross may be cited among those who have contributed most to the science and practice of modern Surgery. To the twin subjects of Obstetrics and Gynæcology, Ramsbotham, Naegele, Burns, Dubois, Simpson, Churchill, Keith, Wells, Matthews Duncan, Leishman, Sims, Simpson, Macdonald, and Croom stand out prominently amongst a large number of distinguished names as most prominent benefactors.

Amongst the outstanding features of the past century have been the rise of entirely new sciences, the development of novel methods of investigation, the discovery of unknown modes of treatment, and the formation of modern methods of thought. As an example of an entirely new science may be cited the subject of geology. Although there were certain precursors in the study of the rocks, such as Smith and Hutton, yet the science may be truly said to have taken its origin in Playfair's memorable "Illustrations of the Huttonian Theory of the Earth," published in 1801, for which, with singular aptness, the author took as his motto: "Nunc naturalem causam quærimus et assiduam, non raram et fortuitam." Amongst the modern methods of investigation must be mentioned the physical diagnosis of the chest practically founded by Laennec, the invention of the laryngoscope by Garcia, and of the ophthalmoscope by Helmholtz, the application of the X-rays first suggested by Röntgen, the introduction of anaesthesia by Morton, Jackson, and Simpson, and the rise and progress of bacteriology, taking its origin in the work of Pasteur. Of modern methods of treatment, the application of bacteriological principles in the practice of surgery inaugurated by Lister: the use of antidotal sera originating with Behring: and of glandular substances in medicine suggested by Mackenzie and Murray, must be considered enormous advances. To such achievements must be added the birth of that most important modern conception—preventive medicine, mainly the creation of Simon. And lastly, amongst modern modes of thought, we must refer to the theory of evolution, dreamed of by many since the days of Lucretius, but rendered reasonable by the labours of Darwin and Wallace; the theory of heredity, vaguely grasped since the prophets and seers of old, and now in some measure explained by the speculations of Galton and Weismann; and the rational explanation of immunity arising directly out of the observations of Behring. These and other modern methods of work and thought constitute a memorable record of a century's progress.

The Journal throughout the hundred years of its existence has been constantly alive to these advances. All of them have been mentioned, most of them have been elaborated, and some of them have been originated in its pages, as the following papers will show.

One or two words must be added regarding the portraits of the former editors and the first publisher. For those of Dr. Andrew Duncan, junior, Sir Robert Christison, Dr. William Seller, and Professor John Hughes Bennett, our thanks are due to the Council of the Royal College of Physicians. Dr. Charles Cormack of Vichy has kindly furnished us with a photograph of his father, Sir John Rose Cormack, and Mr. H. H. Fletcher of Kenilworth has kindly lent us the photograph from which the portrait of Dr. Fleming is taken. To the Librarian of the University of St. Andrews we are indebted for assistance in selecting the photograph of Professor Day. Mrs. G. W. Balfour has been so good as to place at our disposal a photograph of Dr. Balfour, which is more faithful to life than any of those in our hands. The picture of Sir William Tennant Gairdner is reproduced from the photogravure of Sir George Reid's admirable picture, and those of Dr. Daniel Rutherford Haldane, Sir Henry Littlejohn, and Mr. Joseph Bell are from photographs, all of which are in our possession. To Mr. Archibald Constable, grandson of the first publisher, our thanks are due for permission to make a reproduction of Sir Henry Raeburn's picture of his grandfather. It has unfortunately not been in our power to secure a portrait of Dr. Craigie.

MEDICINE.

By J. S. Fowler, M.D., F.R.C.P.Ed.

Even to recapitulate the titles of the papers in medicine which have appeared in these pages during the last hundred years would be to outline a century's progress in the practice of physic. The briefest summary would be a history of the ebb and flow of medical thought during the epoch of the greatest scientific renaissance the world has seen, and the present chronicler shirks this task for a lighter one. Of the great achievements in medicine, a few have been heralded by communications in the Journal; nearly all have been contributed to by articles either constructive or critical. Many of these papers are of the highest interest; some, indeed, may fairly be said to rank as medical classics, in that the truths they enunciated for the first time, at once recognised as fundamental, were speedily absorbed into the general current of medical thought, and became an integral part of the foundation of modern clinical medicine. In this age of scientific bustle, papers such as these run the risk, like the larger classics, of sinking into partial oblivion—a danger to which both are exposed through the very completeness of their incorporation into the speech and thought of the time rendering the study of original sources unnecessary. This, then, is our justification, if any were needed, for taking advantage of the Centenary of the Journal to trace again some of the pioneer work of bygone days.

Of all diseases, those of the organs of the circulation have received the most uninterrupted study from writers in the Journal, and the articles dealing with them form a continuous chapter of steady advance in knowledge. In the very earliest years of the century, numerous descriptions of congenital cardiac malformations occur. A paper by Wishart on "A Singular Disease of the Heart" deserves mention on account of the faithful clinical and pathological description of mitral stenosis embodied in it. Rheumatism of the heart is first mentioned in 1814 by Russell, who says that the tendency of carditis to be associated with rheumatism had recently been learned. The most important of the earlier papers is that of Knox (1815) on the diurnal revolutions of the pulse; it is full of minute original observations, proving the incorrectness of the ideas then current, and showing that the pulse becomes less frequent as the day advances. We may anticipate a little here by remarking that Guy, in 1841, dealing with what was still a moot point, the diurnal variation of the pulse in disease, confirmed Knox's observations in almost every particular. In 1816, Andrew Duncan, jun., writes on carditis, his text being three cases of pericardial effusion. It is noteworthy that he refers to the value of percussion of the lower part of the sternum in the diagnosis of the condition, though it does not in his hands seem to have led to any practical result, for he says with admirable candour that any attempt to connect the symptoms during life with the appearances after death would be premature. In the same volume, Spens reports a case of what is now known as the Stokes-Adams syndroma—bradycardia with apoplectiform seizures; and George Pearson, in a lecture on the jugular pulse in heart disease, foreshadows the knowledge of to-day. In 1822 a new era in the study of cardiac lesions was inaugurated by a long analytical review of Laennec's "Treatise on Auscultation." The stethoscope, however, did not at once become popular. The first indication of its use is in a paper by Vernon in 1828, when the auscultatory signs of mitral stenosis are described, there being, however, no attempt either to make a diagnosis or to correlate physical signs with post-mortem appearances. In 1829 and 1830 the first papers on physical diagnosis appear—one by Williams on the sounds of the heart, in which the theory that the auriculo-ventricular valves cause the second sound is promulgated; and one by Stokes, who discovered that the cardiac preceded the arterial impulse, the interval being proportionate to the distance of the artery from the heart. Next year Stokes again appears, with a description of dislocation of the heart by external violence. In 1832 one of the most important papers ever written on heart disease appears—that by Corrigan on aortic incompetence. However interesting it might be to dwell on his communication as it deserves, space forbids that we should say more than that he recognised as causes of inadequacy rupture and shrinking of the aortic valves and dilatation of the vessel itself, that his description of the signs has not been substantially altered, and that he opposed the use of digitalis in treatment, as it lengthened the diastole and thereby increased the arterial reflux. In 1837, Henderson made an attempt to deny the correctness of Corrigan's observations, but with little success. Between 1849 and 1851, Ritchie published a long series of cases with comments, very clearly showing the distinction between simple dilatation secondary to emphysema and bronchitis, resulting in failing compensation, and the same symptom consequent on organic valvular disease. In 1852, Quain, writing on fatty heart, differentiates infiltration from degeneration; the effects of the former were doubtful, those of the latter were coma, syncope, pain, dyspnœa, and angina. The diagnostic features were irregularity and weakness and infrequency of the pulse, feeble sounds, and possibly murmurs if the columnæ carneæ were diseased. Travelling as we now are over more familiar ground, we may be allowed to quicken our steps. Between 1855 and 1861 we have an important group of articles by the present Sir William Gairdner on adherent pericardium and pericarditis, on dilated heart, on cardiac murmurs, and on contraction of the pupil in aortic aneurysm. He showed that by no means all adhesions of the pericardial sac affect the heart within; that the heart sounds are feeble in dilatation, and frequently accompanied by murmurs, not loud and clear as the teaching of the day had it; that friction should not be too exclusively relied upon in the diagnosis of pericarditis, and that it is not entirely suppressed by the development of adhesions. In 1871–72 the late George William Balfour began his classical "Clinical Lectures on Heart Disease"; they appeared at intervals until 1876, and ten years after their completion the first pages of the "Senile Heart" were published, the last appearing in 1891. In 1877, Gibson and Bramwell began to contribute papers—the former on the auricular impulse, the latter on aortic aneurysm. In 1882 we find Russell writing on hæmic murmurs: and in 1898, James Mackenzie on movements of the heart. One can hardly appreciate better the distance we have traversed in this brief survey than by contrasting the elaboration of Mackenzie's work on the venous pulse with that of his predecessor, George Pearson, on the same subject in 1816.

Diseases of the nervous system are probably treated of in a greater number of articles than any other class of maladies, but much of the work—and that the most important—is, of course, of recent date, and hence may be briefly passed over. In the earliest volumes the treatment of chorea by purgatives, as recommended by Henderson, claims a number of communications, not, however, of any great interest. In 1818, memoirs on nervous diseases, from the pen of John Abercrombie, appeared. Alike from the inherent merit of his writings, their originality, their extent, and the range of subject which they comprise, his contributions to the Journal entitle Abercrombie to be regarded as its great pillar of strength in those early days. Like John Hughes Bennett at a later date, he stands pre-eminently forth, a head and shoulders above his contemporaries. He described spinal meningitis, haemorrhage, tumour, and compression: in a subsequent series of articles he wrote on inflammation of the brain and on apoplexy. Cases of the last disease he classified into apoplectic, those beginning with headache and going on to coma, and those accompanied by transient, if any, affection of consciousness, but characterised by paralysis and disturbance of speech. He recognised haemorrhage and apparently thrombosis as causes, but not embolus, though he knew that apoplexy was a not infrequent concomitant of heart disease. In further papers on organic diseases of the brain, in 1819, he distinguished cases according to their leading symptoms—headache, affections of the sense organs, convulsions, paralysis, vomiting, and apoplectic seizures. He clearly recognised, moreover, that these symptoms often occurred in combination, *e.g.*, convulsions and headache, paralysis and affections of sight. His cases appear to have been for the most part gummata, tumours, cysts, and thrombosis. In these, as in all his writings, one marvels at the diligence with which he analysed and commented on his wealth of clinical and anatomical material. In 1824, Bardsley brought home from Paris observations on the treatment of mental derangement at the Salpêtrière. He speaks highly of its humanity, neither venesection, emetics, nor the cold bath being used. Laycock's earliest papers appear in 1838, the author being at that time house surgeon in the York County Hospital. His subject, hysteria, was evidently congenial to his speculative and versatile intellect, for he returns to it anew in 1839, illustrating and commenting on the topic with a wealth of reference not only to medical, but to biological and ethnographical literature rare in those days. Hughes Bennett's pathological and histological investigations on the nervous centres in the volumes for 1842 and 1843 are comparable in their extent to those of Abercrombie. They are among the first instances of the use of the microscope (Bennett relates that his instrument was made "under my own eye" in Paris) in the study of morbid anatomy, and deal largely with the nature of softening and the "exudation corpuscle." In 1852, Lockhart Clarke's researches on the structure of the spinal cord were published. In addition to discovering the column which bears his name, he traced the spinal accessory fibres to the anterior horn. In the next year, Budge described the action of the third nerve and sympathetic on the movements of the ocular muscles, and the connection which subsists between the optic and third nerves through the anterior corpora quadrigemina. In the early sixties, Laycock and Warburton Begbie differed as to the nature of exophthalmic goitre, and wrote papers in support of their respective views. Laycock, who apparently did not clearly recognise the unity of the symptoms of Graves' disease, maintained that the "protrusion of the eyeballs termed anæmic" had a cerebro-spinal origin. Begbie, on the other hand, held to its anæmic nature, though he believed the nervous system also took part in its production. In 1863–64, Greenhow published an account of post-diphtheritic paralysis, and about the same time Sanders began a series of papers on neurological topics—paralysis of the palate in Bell's palsy, aphasia (his was the first published autopsy in Great Britain of a case of motor aphasia due to lesion of Broca's convolution), and other subjects; the brilliancy of these makes us regret the more their untimely interruption. From this date on scarcely a year but has valuable original contributions to the pathology of the nervous system—Begbie, Fayrer, Scoresby Jackson, and later Wyllie and Bramwell, wrote on aphasia, and Ireland (the jubilee of whose career is now approaching) on idiocy and imbecility—a work which, begun thirty-three years ago, is still the standard text-book. Charcot contributed papers on "Sclérose en Plaques" between 1875 and 1877, while at the same time Stirling's work on the spinal reflexes appeared. The late Sir Thomas Grainger Stewart wrote his well-known article on paraplegia in 1876; it is the first in which we read of the now familiar methods of examining the functions of the cord. He followed it in 1880 by a paper on paralysis of the hands and feet, one of the first observations on peripheral neuritis. Tuke's Morison Lectures and his essays on Medicine and the Law, Clouston on the Neuroses of Development, Bramwell on cerebral tumour, and Gibson on Cheyne-Stokes Respiration and on Nervous Diseases of the Heart, are among the recent standard monographs which have appeared in the Journal. Finally, no better illustration can be given of the enormous strides which neurology has made of late years, than to compare Sanders's case-taking card drawn up in 1873, with its successor of to-day. It runs: "Nervous system (*a*) Peripheral. Nerves, as to motion, sensation, special senses; (*b*) Central. Brain and spinal cord, as to well-being or exhaustion, intelligence, sleep, headache, vertigo, nausea, etc."

The first paper of any weight on pulmonary affections is one by Renton in 1820, who describes a case of *empyema necessitatis* in a child; the paper, but for the fact that the author felt deterred from operating, might well have been written to-day. Abercrombie in the next volume wrote with his accustomed fulness on consumption; he thought that tuberculous ulcers of the lung might heal, and advocated the systematic examination of many dead bodies in search of proof of this. He had already given a graphic description of the symptoms of retro-pharyngeal abscess—"a singular affection of the throat in infants"—in a previous volume. Andrew Duncan, jun., was the first of the moderns. He must have been a physician of unusual penetration, and endowed with a mind so flexible as at once to assimilate novel methods of diagnosis. In 1827 he refers to the stethoscope and percussion, and was evidently one of the first to use them. The article is on empyema and pneumothorax, and is admirable, though he thought that pus always preceded the presence of air in the pleural cavity. A case record of his, written in 1820, contains a description of physical signs. In 1831, Gregory describes melanosis of the lung, which was common in Scotland, and no further notable papers appear until 1841, when Drysdale and Russell, home from Vienna, depicted Skoda's practice and his work on auscultation and percussion. In 1845, Hughes Bennett describes the cure of phthisis by fibrosis and calcification; the observations were based on 500 autopsies. The fibrinous nature of the exudation in croupous pneumonia was indicated by Aitken in 1849, and the morbid anatomy of emphysema by Rainey in 1850. Bennett, writing on the early diagnosis of phthisis in 1855, laid stress on the recognition of elastic tissue in the sputum, on the gravity of bronchitis sounds of long persistence, and on the importance of the cracked-pot sound. In 1856, Edward Smith discoursed on the curable stage of phthisis, by which he meant a pre-tuberculous stage, for tubercle, once laid down, could not, in the strict sense of the word, be called curable. At later periods we have Laycock on fœtid bronchitis, Begbie on paracentesis, Grainger Stewart's theory of bronchiectasis — the essential feature an atrophy of the bronchial wall (1867), and James's work on phthisis in the eighties.

Papers on diseases of the kidneys begin to appear in 1829, when Christison, writing on a variety of dropsy which depends on disease of the kidneys, claims to be the first who has endeavoured to extend or to confirm Bright's views, then two years old. Needless to say, he did both these things; he seems to have corroborated Bright's discovery in all its details, and also recognised the presence of urea in the blood, and speculated as to whether post-scarlatinal dropsy was of the same nature as Bright's cases. In 1831, at a time when Graves and Elliotson were sceptical of the correctness of Bright's views, Gregory published observations conclusively proving the value of albuminuria as a sign of kidney disease, and showing that it might occur apart from dropsy. In a continuation of the same paper he records cases relieved or cured, and emphasises the importance of low specific gravity of the urine. Ten years later, Williamson published a series of cases of albuminuria unconnected with Bright's disease. In this paper he notes that an unusually low specific gravity of the urine is a danger signal. " Some Account of a new Animal Substance occurring in the Urine of a Patient labouring under Mollities Ossium " appeared in 1850. The discoverer and the substance have alike become known all over the world in the name Bence-Jones albumose. In 1852 we find Weir Mitchell contributing a short note on the crystalline forms of uric acid, and in 1856 G. W. Balfour discusses the diagnostic value of albuminuria under the headings non-dropsical and dropsical, each being febrile and afebrile; while in 1859, Roberts, in his "Daily Changes in the Urine," demonstrated the occurrence of the " alkaline tide " after food. In 1860, Grainger Stewart began to recount his work on Bright's disease, beginning with the diagnosis during life of the condition known as waxy or amyloid Bright; he reinforced his first paper by a second series of observations four years later. In 1870 we find him expounding the view that all forms of nephritis lead ultimately to a third stage—that of contraction; and in 1886 his lectures on albuminuria appear. These are the principal papers on urinary diseases. It should also be mentioned that a new clinical method (the fermentation test) for estimating sugar was introduced by Roberts in 1861, and the ureometer employed until comparatively recently by Graham Steel in 1874.

It is perhaps a sign of the proverbial frugality of the nation that the domain of "the great god γαστήρ" does not occupy many of the columns of the Journal. Abercrombie wrote with his usual thoroughness on the pathology of the stomach and intestine in 1820, 1825, and 1828. His practical conclusions on ileus and peritonitis will bear summarising:—"(1) Inflammation may go on while the bowels move freely: (2) the character of the stools is no guide; (3) every variety of pulse may occur; (4) there may be inflammation without vomiting or pain; (5) deep tenderness, if well marked, is the most valuable indication. He gives the signs of gastric ulcer as we know them now, and treated it with iron and bismuth, uncertain, however, whether it could ever be cured. No further articles deserving mention are found until 1842, when Goodsir described the structure, mode of reproduction, and development of "a vegetable organism, of an undescribed form, ejected from the stomach," and christened it "sarcina," from its resemblance to a wool-pack. Of later date we note Murchison on hydatids of the liver, Grainger Stewart on acute yellow atrophy, and in our own day Gillespie on the chemical examination of gastric contents, and John Thomson on congenital obliteration of the bile ducts.

The articles on fevers and infectious diseases throw an interesting light on the history of the epidemiology of the locality. The early volumes, however, go further afield, and are full of references to yellow fever, guinea-worm, Egyptian ophthalmia, and other tropical maladies, the opportunities for studying which were never lacking in those days of Empire building. For these, however, this reference must suffice. The history of the introduction of thermometry as writ in these pages is curious. In 1812, Buchanan of Glasgow notes in a casual reference that "Fahrenheit's thermometer used in the axilla . . . registered 102°." The instrument was also used in the investigation of the case of the fasting woman of Tutbury about the same period. The subject then drops until 1862, when Wunderlich's monograph is reviewed, but even after this temperature records are long in appearing. In 1864, Bartlett and Ringer published their temperature observations in ague: in 1865, G. S. Smith recorded exact measurements of the temperature in children; in 1867, T. J. Maclagan described the temperature curve of typhus, typhoid, and pneumonia as shown by the thermometer, which some "regarded as a mere scientific toy," and even in 1872 the method of temperature taking is described by Foss in an article on Rötheln as if it were a great novelty. A year later, Joseph Bell gave charts of surgical cases, and apparently thereafter the thermometer came into general use.

The question of the identity or non-identity of typhoid and typhus fever does not seem to have created any great amount of discussion. As early as 1820, Abercrombie recognised certain cases of ulceration of the bowels as those whose nature was causing so much dispute in France. In an article on the epidemic fever prevalent at the time, Alison in 1827 insisted on a contagious as opposed to a miasmatic origin, and also that frequent or prolonged intercourse with the sick favoured infection. He divided cases into simple, those with affection of head, those with affection of the chest, and those with affection of the abdomen. In 1831, Corrigan discussed the interpretation of the ulcers of the bowel, and concluded that they did not justify the recognition of typhoid; this on the ground that abdominal symptoms did not develop until the twelfth day or so, and hence could not be held responsible for the initial headache and pyrexia. So far as Edinburgh was concerned, the question must have been settled by a valuable critical paper by Stewart in 1840, clearly demonstrating the non-identity of typhus and typhoid. The first mention of diphtheria is in 1826, when Robertson describes, under the title cynanche laryngea, an undoubted epidemic in Kelso. In 1861, Begbie takes up the subject again, deciding that the disease was constitutional and contagious, related to scarlet fever and typhoid, having as a local lesion an asthenic inflammation. In 1843 Craigie writes on relapsing fever, and in 1847 Paterson strongly advocated tents and temporary shelters for the treatment of an epidemic of typhus and relapsing fever then raging. The cholera epidemic of 1858 forms the subject of a series of articles from the pen of Begbie, in whose charge the city cholera hospital was placed. Of 243 patients, nearly one half died. A considerable amount of Murchison's work on fevers appeared in the Journal from 1858 to 1860; and to complete the tale of advances in knowledge of infections, it only remains to mention Knox's papers on trichinosis in 1836, the year after its discovery by Paget in London, an article on the daily excretion of urea in typhus (one of the first of its kind) by Anderson, then a house physician in the Infirmary, in 1865–66, Burdon Sanderson's demonstration of the infectivity of tuberculosis in 1869, some early inoculation experiments with septic blood by Thin in 1873, and Afanassiew's paper on the bacteriology of the pneumococcus, showing how it could be recognised in the sputum, in 1884.

Turning now to some general diseases, we read in 1807 a paper by Halle giving a good clinical description of miner's anæmia, cured by chalybeates and removal from the area where the disease prevailed. Thomas Hodgkin, who graduated in Edinburgh in 1823, contributed, while still an undergraduate, a paper "On the Uses of the Spleen" to the Journal for 1822. His hypothesis that the function of the organ was "to maintain a balance between the circulating fluid and the vessels destined to contain it," and that it was "subservient to the vessels generally," is about as near the truth as any later experimenter has attained. Ten years later, the author published in London the researches on the disease which bears his name. Another early paper (1812) worth quoting is Cooke's description of "A Case of Singular

Torpor," which the post-mortem failed to explain. It is in fact a most graphic account of the downward progress of an extreme case of myxœdema. John Hutton Balfour's celebrated case of chloroma was recorded in 1835, and in 1845 Bennett's historical paper on leucocythæmia appeared. It is but fair to Craigie to remember that his cases were published simultaneously with Bennett's, though to the latter is due the credit of recognising the nature of the condition. Further papers on leucocythæmia were written by Shearer (1860), who noted the excessive excretion of uric acid, and speculated whether it originated (as we now know is the case) in leucocyte destruction; and by Paterson (1869), who was one of the earliest to recognise the acute type of the disease. Papers on gout and rheumatism are not numerous; indeed, but for Begbie's articles on gout, which he, though opposed in this by Christison, contended was common in Edinburgh, one might pass them by. Begbie ascribed to gout a much wider influence than most physicians, and his unrivalled experience in private practice is witnessed by the manner in which he uses family histories to illustrate the protean nature of gouty manifestations.

In the region of treatment our attention naturally centres itself round the venesection controversy of the mid-century. But before sketching the origin and outcome of this, some isolated therapeutic facts of interest may be mentioned. The earliest reference to quinine as a recently introduced and valuable febrifuge appears in a paper by Dickson in 1823, and in 1831 Stokes (in his first contribution to the Journal) opposes bleeding in ague when "so simple and infallible a remedy as quinine is available." Braid in 1846 has a paper on the power of mind over body, but "Braidism" does not seem to have had many adherents, for the subject was not followed by any further articles on hypnotism. The writer is unaware whether the present-day use of digitalis in epilepsy wittingly has its root in folk medicine. It was employed as early as 1827, as a paper by R. W. Scott attests, with success in a case of nocturnal epilepsy. But what is of peculiar interest is a note in 1851 of "A Deleterious Practice of Irish Peasants"—the use of toxic doses of digitalis purpurea to expel fairies from epileptic children, the sufferer being looked on as a substitute inhabited by the wanton spirit who had stolen the real child. In 1834, Henry described the solution which bears his name: his encomiums on the celebrated preparation are many, and not undeserved. One of Douglas Maclagan's earliest papers, in 1838, dealt with the analysis of two competing preparations of James's powder (self-prescribed with such dire effect on his own deathbed by Oliver Goldsmith), and showed that neither excelled the pulvis antimonialis—save in price. In the early sixties a good deal was written on the treatment of delirium tremens, with the result that the antiphlogistic regimen was replaced by the milder expectant treatment of Pirrie, Laycock, and others. In

1868, Balfour's article on the treatment of aneurysm by iodide of potash appeared, and in 1871 Affleck made known to the profession Kussmaul's method of washing out the stomach in the treatment of dilatation of the organ. One of the latest of the great therapeutic advances received early support by the writings of Bramwell, Thomson, and others on the thyroid treatment of myxœdema and cretinism in 1892. The earlier articles in the Journal are full of therapeutic details: the purge, the emetic, the lancet are a sufficient description of most of these. In 1811, Robertson scoffed at the timid, and advised the withdrawal of 50 oz. of blood at the onset of pneumonia. But a reaction was setting in even in the first quarter of the century. Wood in 1825 describes the new treatment of pneumonia by tartar emetic; he bled also, and would have liked to have done it more freely. Stokes, as we have said, discouraged bleeding in intermittent fever, and in 1849 Bell was driven to restate the advantages of venesection in cholera, "as there was a tendency to discredit it." The credit of the first great onslaught is, however, due to the late George Balfour, who, in his "Notes on the Practice of Skoda," in 1847, showed that the mortality of pneumonia treated expectantly was 13 per cent. as against 36 per cent. in the Edinburgh Infirmary. But the real battle did not begin until nine years later, when Bennett in 1856 stated that the mortality of pneumonia had diminished since large bleedings had been abandoned. Alison took up the cudgels for a practice of the benefit of which forty years' experience had assured him. Bennett was not present at the meeting at which this paper was read; he was soundly trounced by several of the speakers for his "crude and rash" theories, and the spirit of acrimony thus imparted lingered on throughout the controversy. The late Sir James Simpson decried the lancet in pneumonia, but he was Bennett's sole supporter. In the same year Bennett replied in a paper in which he laid down the following propositions: (1) That little reliance can be placed on the experience of those who, like Cullen and Gregory, were unacquainted with the nature of internal inflammations; (2) that inflammation is the same now as it ever has been, and that the analogy sought to be established between it and the varying types of fever is fallacious; (3) that blood-letting is opposed to a sound pathology; (4) that an inflammation cannot be cut short, and that the only end of judicious practice is to conduct it to a favourable termination; (5) that past experience and present observation alike establish the truth of the preceding principles as future guides. Alison, Christison, and Gairdner, in the discussion which followed, opposed Bennett's views, and the controversy settled down into two main channels: first, the reliability of inferences drawn from statistics of cases at different times and in different conditions; and secondly, the question whether the type of inflammation had changed with the passage of years. In his reply to Bennett, Alison relied much on authority and experience, and argued further that the type of inflammation had changed since the days when profuse blood-letting was the rule. He also asserted that inflammation could be cut short if suitable means were adopted. In his rejoinder Bennett quoted a letter from Mr. (now Sir) Arthur Mitchell, then in Vienna, that no man there entertained the idea that the changed treatment of pneumonia had resulted from any change in its type. So it went on — argument and reply, thrust and counter; it would be idle to follow all the phases of the dispute. Sir Thomas Watson intervened in favour of blood-letting, but admitted that no sane person treated all cases in the same way; "the great majority are treated without venesection . . . some with mere expectation." The next discussion at the Medico-Chirurgical Society (March 4, 1857) on a paper by Christison on the changes which have taken place in inflammations and fevers, was even more acrimonious than those which had preceded it, both the Gairdners, Maclagan, John Moir, and Andrew Wood strongly condemning Bennett, whose statistics apparently were particularly open to criticism. Debates of this nature dragged on until July of the same year, when the combatants, each unconvinced, desisted. The echoes of the controversy, however, made themselves heard in the pages of the Journal for some time, papers being written by Wilson in favour of blood-letting, though "many cases recover without it": by Kennedy on the "Change of Type Theory of Disease"; by Murchison, advocating the same view; and by Gairdner. An historical sketch of the subject is contained in George Balfour's "Hæmatophobia," which appeared in 1859, eleven years after its author had lit the match which fired the magazine. We have dealt with this controversy in general terms, because, as it seems to us, it was, despite its personalities, a purely academic affair. The fact is, the battle was won before a shot was fired. As Bennett himself said, "The discussion of the theory, instead of preceding, . . . followed the change of practice." Both parties were to some extent tilting at windmills, hence, perhaps, no converts were made on either side; meanwhile, the common sense of the rank and file of the profession, and possibly of the laity as well, was daily, to a greater and greater extent, discarding the heroic methods of the past. Though Bennett stood practically alone against his contemporaries, one suspects that there was no very great difference between his practice and theirs, which may be summed up in Gairdner's axiom: "It is better to leave the management of pneumonia to nature than to interfere with it by powerful remedies"—wise words of one of the Nestors of medicine, which may fittingly conclude this retrospect.

SURGERY.

By Alexander Miles, M.D., F.R.C.S.Ed.

The objects of the *Edinburgh Medical and Surgical Journal*, which was launched on the stream of scientific literature a hundred years ago, were set forth in an "Advertisement," in which, despite the title of the Journal, surgery occupied a comparatively inconspicuous position. Those who directed the policy of the Journal requested their correspondents "*to cultivate Medical Surgery, to improve the Operations of Surgery, and to simplify its apparatus.*" We can scarcely hazard an opinion as to the precise significance of the term "medical surgery" in the minds of those who used it; but, from the fact that it was the only field which they suggested to be in special need of cultivation, it is apparent that they considered it in a somewhat backward condition as compared with the other ancillary branches of medicine. That the operations of surgery left room for improvement, and that its appliances were capable of being simplified, the most cursory study of the surgical writings and illustrations of the eighteenth century amply demonstrates. In this connection, however, it is interesting to observe that in 1809, four years after the establishment of the Journal, John Bell, "one of the most talented surgeons that ever practised in Edinburgh," complains that "operations usurp an importance in surgical education which they should not naturally have. Operations have come at last to represent, as it were, the whole science, and a surgeon, far from being valued according to his sense, abilities, and general knowledge, is esteemed excellent only in proportion as he operates with skill." Are there not some who hold the same opinions to-day?

It was with considerable interest that we turned to the first purely surgical paper in the Journal, expecting, we must confess, to find in it some quaint and curious specimens of forgotten surgical lore, and hoping that we should be able at once to indicate how far the wishes of the editors had been gratified, and to illustrate the extent to which the processes of cultivation, improvement, and simplification had progressed since it was penned. We had only to turn over twenty pages to come to a paper by P. P. Drew, M.D., of Fermoy, county of Cork, which disappointed all our anticipations. According to the custom of the time, its title summarised its contents. It was headed, "Two cases of tumours in the pelvis growing out of the sacro-sciatic ligament, one of which terminated fatally, and the other was cured by extracting the tumour through an incision made into the cavity of the pelvis through the perineum." For our present purpose we need only refer to the case upon which Dr. Drew operated. It was that of a lady who had been two days in labour before he was called to her aid, in consultation with Dr. Power, Dr. Hannan, and Mr. Pack, surgeon to the 41st Regiment of Foot. The cause of the delay he found to be a large tumour, which blocked the outlet of the pelvis. The important part of the operation is thus described, the penultimate clause supplying the inevitable Hibernian flavour to the description: "I made my incision by the right side of the perineum and anus towards the os coccygis, and with the second stroke of the scalpel brought the tumour into view. I passed my finger before and behind its root, which I easily divided with the knife, introduced my hand, and detached it from the pelvis; withdrew that hand and introduced the other, by which I separated it with equal facility from the vagina and rectum, and, to their great pleasure and surprise, brought it away." After the operation "no fainting occurred. . . . We administered a little wine, but the best of cordials was the great pleasure and satisfaction the patient saw in the countenances of us all." After the removal of the tumour the labour progressed, and the patient was delivered of a fine healthy child. Three days later the wound was healed, and the patient and her infant were "both doing well."

Comment on such a case would be superfluous, but we may be allowed the remark that, whatever may have been the condition of medical surgery in Ireland at that date, obstetrical surgery had not been left uncultivated. Although the case is described with all the attention to detail which characterises the writings of the period, so far as we can discover, throughout the operation Dr. Drew only used a scalpel, a sponge, and a needle. This leaves very little room for the simplification of surgical apparatus.

It must be admitted that all the operations recorded in the early years of the century did not reach the same high standard as that just narrated, but there are few which do not elicit alike our wonder and our admiration; the courage and skill of the operator being as a rule only exceeded by the fortitude and patience of the sufferer.

In the course of our browsing among the musty pages of the early volumes, we have come across much that is no less instructive than interesting, and at times even amusing. Nothing has struck us more than the absence of restraint with which the old-time practitioner recorded the histories of his patients, and the intensely human interest he was thereby able to give to his reports. As we read we are carried to the bedside of the sufferer; we enter into the spirit of the scene; we share the patient's pain and the doctor's anxiety. If the issue is happy, we turn over the page with a sigh of relief; if otherwise, with a pang of regret.

Witness, for example, how Macleay, of Oban, introduces us to a case of encysted ascites with hydatids. "Some time ago I was called to visit a man named Monro, who lived at the distance of five miles from me. The extreme wretchedness which the economy of his house, and the appearance of his wife and five children, together with his own miserable situation, reclining upon a parcel of straw, and labouring under the double misfortune of disease and poverty, exhibited, called up that sympathy which interests the heart in the sufferings of humanity." The description of the patient's symptoms is no less graphic than that of his surroundings, and leaves on the mind of the reader a clinical picture which is slow to fade.

Or, again, note how George Nesse Hill, of Chester, enlists our interest in a case in which he successfully performed a plastic operation for cicatricial contraction following a burn: "A lively handsome boy, eight years of age, was one day standing alone near a large kitchen fire, when a sudden current of air from an open door at his back drew his brat or pinafore to the bars of the grate and set it on fire." We do not know which to admire most, the perspicuity of the style, the brevity of the expression, or the purity of the English.

It was the same writer who, in 1819, under the somewhat ironical title of "A Memoir on the Extraction of a Tooth" furnished a most graphic, almost tragic, description of a case of sarcoma of the upper jaw.

During the first quarter of last century the subjects which perhaps bulked most largely in the minds of surgeons were aneurysm, hernia, and the treatment of stone. The pages of the Journal reflect not only the diversity of opinion which existed on various points connected with these subjects, but also the tenacity with which different and often conflicting views were held.

With regard to aneurysm, it is true, the teaching of John Hunter still influenced the majority of surgeons during the first two decades, and the literature of that period is notable chiefly for the courageous attempts which were made to cure these conditions by proximal ligature of large arterial trunks. It is impossible here to cite more than a few of the operations which have become classical, and which were recorded in the pages of the Journal. In 1807, John Abernethy published his "Case of Femoral Aneurysm, reaching as high as Poupart's Ligament, cured by tying the External Iliac Artery." He had performed this operation twice before, but without saving the patient's life. Within the next ten years, Goodlad, Newbigging, and Archibald Robertson reported similar cases. Scarpa's views on the treatment of spurious aneurysm by operation appeared in the third volume of the Journal. In 1814, Macaulay recorded a case of traumatic aneurysm treated by ligature of the left carotid artery. The following year Colles' paper on the operation of tying the subclavian artery appeared, and, in 1819, Dupuytren gave his account of the same operation. In 1817, Astley Cooper published his famous case of ligature of the abdominal aorta, the first operation of the kind recorded.

Numerous papers on hernia appeared in the earlier volumes of the Journal, but none were of outstanding importance. In 1806, Wardrop described in some detail a case of crural hernia, in which the obturator artery surrounded the neck of the sac. As early as 1811 we find Geogehan strongly recommending that taxis should be abandoned in cases of strangulated hernia, and that operation should be resorted to as soon as the diagnosis is established. That his followers were few is perhaps less astonishing than that a surgeon who advocates the same line of treatment to-day is still as one who cries in the wilderness. In 1814, Penkivil discussed at some length the question as to whether or not it is necessary to open the sac in the operation for strangulated hernia; and in the following year Edmonston made some remarks on the impropriety of returning the sac unopened into the abdomen.

The most important contributions on the subject of hernia which appeared in the Journal during the first twenty-five years of its existence were the Critical Analyses of Sir Astley Cooper's works on this subject (1806–7); of Scarpa's "Treatise on Hernia," translated into English by J. H. Wishart, of Edinburgh (1816); and of Hesselbach's "De ortu et progressu Herniarum inguinalium et cruralium" (1817).

Few subjects in surgery have given rise to more contention than the treatment of stone in the bladder, and much of the controversy raised has had relation to the means of overcoming the obstruction offered by the prostate. The precise function of this gland was for long a matter of debate, and the question is perhaps not yet settled. Whatever may prove to be its physiological rôle in the perpetuation of the species, there can be no doubt as to the part it has played in propagating dissension among operating surgeons. In our own day, some difference of opinion exists anent the possibility of removing the gland, and the best means of attempting it, and the discussions regarding this matter are not always conducted in cold, or even cool, blood. A century ago, surgeons were debating with no greater calmness the merits of rival methods of incising the gland in the course of the lateral operation of lithotomy. There were two rival camps. In one the disciples of Cheselden raised the standard in favour of the grooved staff and the scalpel; in the other, the followers of Sir Cæsar Hawkins rallied to the support of the cutting gorget.

In 1809, William Lawrence, then Demonstrator of Anatomy at St. Bartholomew's Hospital, ran a tilt against the gorget, which was the signal for a general engagement. His main contention was that the gorget was a mere mechanical tool, and that "its employment requires no knowledge of the parts to be cut." He quoted John Bell to the effect that "the Hawkins operation is a blindfold stroke, which can be as successfully performed by the ignorant as by the skilful." He advocated the operation of Cheselden, which he regarded "as the pride of English surgery."

"It is performed," he says, "with a knife, staff, and forceps, and I really believe that 'what is more than these cometh of evil.'" Thomson, the Professor of Military Surgery in Edinburgh, joined in the fray, and wrote to the effect that "those who use more complicated appliances lead us to suspect that they are intended to supply the want of anatomical knowledge and practical skill on the part of those who employ them." Allan Burns, of Glasgow, also was in the anti-gorget camp. Of "that dreadful instrument the gorget," as Barlow of Blackburn called it, he said that "surgeons continue to employ it, not because they look upon it as well adapted for the end for which it was introduced, but merely because it was transmitted to them by their forefathers, who knew no better mode of operating."

Scarpa entered the lists with "A Memoir on the Cutting Gorget of Hawkins," and in the celebrated surgeon of Pavia the supporters of that instrument found their most influential recruit. Their most energetic leader, however, was Mr. W. Simmons, of Manchester, who replied to "the ingenious Mr. Lawrence" with great dialectic skill. He found some weak points in his opponent's armour, and was not slow to take advantage of them. To his mind it was no fatal argument against a surgical instrument that it could be wielded as successfully by the tyro as by the experienced operator. The safety of the patient was the first consideration, and, if the gorget could be safely and successfully used by practitioners whose experience and skill were insufficient to enable them to operate with the scalpel, the gorget was the better instrument.

In connection with Mr. Simmons' share in the controversy, one of the most curious incidents in the history of medical journalism occurred. Mr. Simmons' reply to Mr. Lawrence's paper appeared in the end of 1809. In October 1811 a letter was received and published by the editors of the Journal over the name of Mr. Simmons. In this letter much that he had said in favour of the gorget was retracted, and an unsuccessful case of lithotomy was reported. "The task," said the writer, "is somewhat painful; but that candour which ought to be conspicuous in all our professional undertakings . . . imperatively points out the rectitude of giving the following history of a stone operation in which I was foiled in the use of the gorget." The letter goes on to describe an operation on a child, in which apparently everything went wrong from beginning to end, and it was at last proposed to put the boy back to bed without having extracted the stone. A further examination, however, revealed the fact that the incision had been made into the substance of the bladder beyond the prostate, and through this opening two stones were eventually removed. The patient died, however, in about twenty-four hours.

It is almost impossible to believe it, but the letter which contained this candid retraction, and the circumstantial account of the operation which prompted it, was a pure fabrication, and the signature affixed to it a forgery. Needless to say, the editors of the Journal were without blame in the matter, and that they did all in their power to atone for the share they had unwittingly taken in "a most unwarrantable and almost incredible transaction." So far as we have been able to learn, the perpetrators of this mischievous hoax were not discovered.

The echoes of this controversy had not quite died away as late as 1830, as we find that a review of Stanley's work on lithotomy, which, unless we are much mistaken, presents intrinsic evidence that it is from the pen of Syme, contains the statement that "the gorget is fundamentally and in principle a bad instrument, and insusceptible of improvement, whatever changes be effected in its construction."

The introduction of lithotrity was the signal for an armistice in the "battle of the gorget," but the question of the treatment of stone seemed inevitably to arouse a controversial spirit among surgeons. If they no longer quarrelled regarding the merits of the instruments used in the cutting operation, they could not agree as to the rival claims of the cutting and the crushing operations. In 1838, William Fergusson, whose habitual caution in statement and moderation in argument rendered him one of the strongest, as he was one of the earliest, supporters of lithotrity, expressed his regret that the discussion of this subject had assumed so much the appearance of personalities and party questions, and that in the heat of argument it was plain that statements had been made on both sides which might not stand the test of strict inquiry.

We have perhaps dwelt unduly on this episode in the history of operative surgery, but its inherent interest and the light it sheds on the modes of thought and expression of that period may be some justification.

Among the other important contributions to the literature of surgery which appeared in the early volumes of the Journal, Colles' original description of the fracture which goes by his name stands pre-eminent. It was published in 1814, and has been so often quoted that it is unnecessary to refer to it further.

William Wood's various papers on "Painful Subcutaneous Tubercle," the first of which appeared in 1811, are also notable, alike as records of accurate clinical observation and examples of lucid exposition.

In 1818, the surgical world was thrown into a condition bordering on excitement by the publication, in France, of a paper entitled "Histoire d'une résection des côtes et de la plèvre." In drawing attention to it the editors say, "No operation seems too desperate for the courage of modern surgeons to attempt. We have now to record an operation . . . without precedent, successfully performed by M. Richerand. We translate his account of the detail without abridgment, wishing to preserve every circumstance of so curious a fact." The operation appeared to be one for the removal of a fungating tumour of the chest wall, involving resection of portions of several ribs and of a considerable area of the pleura. Such operations in our own day are not uncommon, but we can well understand the interest aroused by this case when we remember that the patient had not the benefit of anæsthesia, and that he was frequently consulted during the progress of the operation as to the propriety of proceeding further. In 1827, Cittadini, of Arezzo, published five cases in which he had performed similar operations.

The earlier volumes of the Journal contain comparatively few references to abdominal surgery, and such as occur are of little or no historical importance. The reports of individual cases, however, are not devoid of interest, sometimes on their own account, sometimes from the sidelights they shed on other subjects.

In a paper on "Introsusception," published in 1807 by Mr. George Langstaff, of London, for example, we come across the following: "Perhaps it may be thought presumptuous in me to comment on any of the remarks made by that luminary Mr. Hunter, but as introsusception is more common to children than adults, and as their diseases belong more to the department of an apothecary than a surgeon, I am inclined to believe Mr. Hunter had not an opportunity of seeing a sufficient number of cases to enable him to give his opinion on this subject with that degree of accuracy he almost on every other was wont to do. . . ." The treatment of introsusception by emetics and purgatives, as recommended by Hunter, the writer characterises as "a proposal manifestly absurd," and concludes that "the aid of medicine and surgery affords not the slightest prospect of benefit." The only hope for the patient, he says, lies in "Nature expelling the gut."

Although the term "appendicitis" had not been invented at the time of which we are now writing, there is no doubt that the affection with which we have become so familiar under that name existed. In 1806, Caleb Crowther, of Wakefield, reported in the Journal a "Case of Abscess in the Abdominal Muscles, which terminated fatally," the description of which leaves little doubt it was a typical example of suppurative appendicitis. In 1813, T. Smith, surgeon, Kingussie, in a paper written to illustrate "the signal advantages which have been found to result from the abstraction of morbid heat by the application of cold water," cites four cases of abdominal inflammation in which his method of treatment was employed. One of these was unquestionably a case of appendicitis, and we refer to it here to draw attention to a plan of treatment, which, so far as we know, has not had a fair trial.

The patient was *in extremis* when first seen by Mr. Smith: "pulse, 138; extremely feeble; hands and nails of a purplish colour; countenance sunk; voice faint and tremulous," is the description given of his condition. After administration of several clysters without effect, cloths wet with *cool* water were applied to the abdomen; "and," says the writer, "as he found this highly agreeable and refreshing, I resolved to venture one step further, and ordered him to be taken out of bed, naked from the waist downwards, and supported by two attendants, with his feet upon the floor (which was a damp earthen one), while I dashed several pailfuls of *cold* water upon his legs, thighs, loins, and abdomen. The first obvious effect of this treatment was upon the strength of the patient. At his first getting out of bed he was totally unable to stand without support, but after the water was applied three or four times he could walk about the apartment alone: and at last, when he saw a pailful of water aimed at him, he sprang aside with great agility to avoid it. I desisted on perceiving this symptom of dislike. Being questioned as to his feelings at this time, he said that the pain and sense of heat within him were gone; and except in his legs and thighs he had not felt cold since he left his bed." Nothing remains to be added save that within a month the patient was taking part in harvesting operations—"*in the South*."

In 1816, Briggs, of Liverpool, recorded a case of peritonitis which proved fatal, and in which on post-mortem examination a human tooth was found in the appendix vermiformis, which was gangrenous. In a case reported in 1824 by H. Home Blackadder, of Edinburgh, "a very large lumbricus" was found in the appendix, and in another "a calculous concretion, in size and shape resembling a thrush's egg," was present.

Many similar cases are to be found scattered through the volumes of the Journal, and as the century grew older their numbers increased. The first really important contribution to the literature of this subject, however, was the report of a discussion which took place in the Edinburgh Medico-Chirurgical Society in 1882, when Dr. J. O. Affleck read a valuable paper on the medical aspects of this disease, and Mr. John Duncan made an equally important contribution on its surgical treatment. Since that date the contributions to the almost colossal literature of appendicitis which have appeared in the Journal have been so numerous that it is impossible even to mention them.

Hitherto we have referred almost exclusively to the contributions made to surgical literature through the medium of the Journal in what, to adopt the expression of the "Advertisement," we may call the period of "Medical Surgery." We take it that that period ended about the year 1820, when the name of Robert Liston appeared for the first time in the list of contributors. Four years later James Syme's first contribution was published, and a new era, not only in the fortunes of the Journal, but in the history of surgery, dawned. To quote the words of Alexander Watson, one of the surgeons to the Edinburgh Royal Infirmary, written some years later: "In this country surgery no longer acknowledges medicine as her mistress, she has broken the chains of servitude, and has raised herself to be dictator in her own province—the treatment of diseases requiring manual operations. The surgeon no longer acts in humble subserviency to the physician."

Liston was twenty-six years of age when he made his first contribution to the Journal. It consisted of a report on a series of five cases of aneurysm, "which, excepting the last, have occurred to me within the last five or six weeks, together with a few other interesting ones, which I may afterwards present to the public." A striking illustration this of the comparative frequency of aneurysm as compared with what prevails in our own day.

In 1820, also, he recorded a case of aneurysm of the left brachial artery in which he had successfully performed the operation of ligature of the subclavian. Later in the same year he published a paper on "Fracture of the Neck of the Femur," an injury in which he early took an interest—it was the subject of his dissertation before the Royal Medical Society—and with which his name is permanently associated in connection with his advocacy of the "long-splint."

In 1821 he published his paper on "The Treatment of Cases of Diseased Bone," and introduced the cutting-pliers or forceps which are still universally employed. It was in the following year that Syme, during his visit to Paris, introduced this instrument to the notice of Dupuytren, who, to the great delight of the young Edinburgh surgeon, demonstrated it to his class, and, after using it at an operation, "expressed himself much pleased with it." Three years later Liston's classical "Observations on Amputation" appeared, by a strange coincidence—if indeed it was merely a coincidence—in the same issue of the Journal as contained Syme's equally famous "Remarks on Amputation."

It is doubtful if any single number of a medical periodical ever contained a series of papers of such outstanding merit and such historical importance as the January number of the *Edinburgh Medical and Surgical Journal* for 1824. Within about forty pages we find Syme's memorable case of amputation at the hip-joint and his "Remarks on Amputation," and Liston's "Observations on Amputation" and his "Essay on Caries and its Treatment."

In 1824, Liston described the famous case in which he amputated through the thigh single-handed, without the aid of a tourniquet. Two years later he broke fresh ground by describing a series of cases in which he had operated for the cure of exostosis of the terminal phalanges of the toes by excision of the affected bone, a plan of treatment which was new and original. Among the great lithotomists of the period when the lateral operation was one of the major operations of surgery, and when the skill with which it was performed was the standard of surgical dexterity, Liston takes high rank. His papers on Lithotomy appeared in 1825 and 1830, and those on Lithotrity and Lithotripsy in 1832 and 1838 respectively.

The first successful case of excision of the lower jaw performed in Scotland was published by Liston in 1831. These are only a few of the papers with which he enriched the pages of the Journal between 1820 and the year of his death. He died of aneurysm of the aorta in 1847. In an estimate of his career from the pen of one of his colleagues, it is said that "Mr. Liston was perhaps the most dexterous operator of this country, or perhaps of any country. . . . Not only was his knowledge of anatomy most correct and his manual dexterity great, with singular firmness and precision of action, but his mechanical knowledge and his readiness and resources under the most varied and different combinations of circumstances showed him to have been born almost to excel in operating." Lord Cockburn in his "Memorials" says of Liston that "he established a great character for professional skill and jealousy," and that in spite of his "taste for quarrelling with his brethren, . . . this too common medical weakness, . . . his general goodness of heart secured him considerable popularity and many friends."

The year 1824 was a memorable one in the history of the Journal. In that year the great Napoleon of Surgery, at the age of 25, made his first contribution to its pages, and for over forty years Syme's writings transcend in importance those of all other surgical writers. Nothing could give us a higher conception of the genius of this truly great man than a study of the pages of the Journal during the period under consideration. Not only are his own contributions of exceptional value, but, as we trace the progress of surgery during this period, we become conscious of the overweening influence his work had on the writings of his contemporaries. The whole tone of surgical thought is changed; the standpoint is raised; the outlook widened. No longer are the records of surgical cases weighted with the pettifogging details of "blooding," leeching, purges, and cordials. Attention is directed rather to the broad general principles which underlie the art, and which Syme, more perhaps than any man, helped to place on a sure and permanent foundation. The crispness and brevity of his style have become proverbial: "He never wasted a word, nor a drop of ink, nor a drop of blood"; and here, as ever, lucidity in diction was but the result of clearness and accuracy in thinking.

Space forbids that we should attempt to review in this place the surgical life-work of Syme, although in the pages of the Journal we should find ample material for such a task were this the occasion for it. It is only possible to indicate some of the points on which his writings influenced the current of surgical thought.

While still a house-surgeon he asserted his opinion, in opposition to that of his "chief," that bleeding was an irrational, and even unjustifiable, measure in patients exhausted by suppuration, and in certain other cases in which it was habitually employed. At the age of 24, he performed the first amputation at the hip-joint undertaken in Scotland, and the record of this case was his first contribution to the Journal (1824). The same year his "Remarks on Amputation" appeared, and this paper did much to establish on a permanent footing the method of amputating by flaps. In 1825, he condemned the prevailing practice of immediately closing incised wounds and applying an impermeable dressing, and advised that the edges should not be brought together till all bleeding had ceased, and that an absorbent dressing should be employed. At that date this suggestion was looked upon as something revolutionary, but its adoption was followed by a marked improvement in the healing of wounds. The use of Chassaignac's rubber drainage tubes, and the substitution of moist dressings for ointments, were among the other improvements he introduced into the practice of his day.

In 1830, in one of the quarterly reports of the Edinburgh Surgical Hospital, which he himself had founded at Minto House in the previous year, he recommended the application of blisters to callous ulcers. This practice he was led to by observing that "many indolent ulcers heal at once without any attention, so soon as the limb begins to recover from an attack of phlegmonous erysipelas which it has happened to suffer." In this paper we have one of the earliest of Syme's trenchant criticisms of his opponents. Referring to the treatment of ulcers by strapping, he says: "Some frivolous and wrong-headed improvers have advised that the straps should not encircle the whole limb, but only two-thirds of it, and in so far have done what they could to bring themselves and the practice into contempt."

About the same time he advised that patients suffering from senile gangrene should be treated on the same lines as patients after ligature of blood vessels, by milk and farinaceous foods, and condemned the plan of prescribing two bottles of Madeira and half a bottle of brandy daily, which he attributed to his then rival, Liston.

During the next five years, in addition to the regular quarterly reports of the Edinburgh Surgical Hospital, he published his papers on "Excision of Diseased Joints" and "Spontaneous Varicose Aneurysm," as well as the first edition of his "Principles of Surgery." In 1833, he was appointed Professor of Clinical Surgery, and during the next few years recorded, at somewhat irregular intervals, the cases treated in the wards of the Royal Infirmary under his care. In a paper on a case of removal of the arm, part of the scapula and clavicle, published in 1836, he describes his experiments "On the Power of the Periosteum to form New Bone." As an example of his own dictum that "there is nothing more creditable than the admission of error," it may be recalled that his probationary essay on necrosis, written ten years before, was designed to show that the periosteum had nothing to do with ossification. He admits, however, that he "was led by the observation of some facts in practice to take an entirely different view, and to perform experiments which completely removed any doubt that could have remained on the subject." Syme's description of these experiments occupies something less than three-quarters of a page of the Journal, and is a perfect model of brevity, lucidity, and precision in scientific writing. It is worthy of remark that in these observations Syme anticipated the more frequently quoted experiments of Ollier by more than twenty years.

Numerous operations for aneurysm, many of which have become historical, were reported during these and the succeeding years. The weight of Syme's influence was cast in favour of the operative treatment of aneurysm in preference to that by compression, and so greatly did his opinion affect the practice of surgeons in Edinburgh, that we find that the first successful cases in which compression was employed there occurred in the practice of P. Heron Watson in 1868—twenty-six years after the method had been adopted with success in Dublin, and after it had been widely practised in other schools. To the advocacy of Syme and of his disciples, notably Mr. Annandale, was due the revival of the "old operation." As we read the descriptions of some of these operations, we can fully appreciate the remark made by John Duncan, that "those who have seen Mr. Syme perform his wonderful operations must acknowledge that such require a man of great skill and resolution, and are not devoid of danger."

Of his work on excision of the jaw, on surgical affections of the rectum, on excision of the tongue, the radical cure of hernia, and the treatment of stricture of the urethra by external incision, we can only make passing mention.

As illustrative of the freshness of his mind and the clearness of his mental vision to the very end of his professional life, it is interesting to note Syme's reference to the antiseptic system in what proved to be his last lecture on clinical surgery (1868). "The antiseptic treatment," he said, "if it have not already done so, is certainly destined in no small degree to revolutionise the practice of surgery."

When Syme died in 1870, all were agreed "that the world had lost its greatest surgeon, Edinburgh one of its most eminent citizens, and suffering humanity one of its truest benefactors."

If we have not referred to the work of some of the more notable of Syme's contemporaries, such as Lizars, J. H. Wishart, James Miller, William Fergusson, and R. J. Mackenzie, it is largely for the reason that comparatively few of their papers were published in the Journal. They were all men of distinction and ability, but in their own day their talents were so largely eclipsed by those of Syme, that in our time their power has been greatly underrated.

No survey of the history of surgery as reflected from the pages of the Journal would be complete which did not contain a reference to the classical papers by Joseph Lister on "The Early Stages of Inflammation" and on "The Coagulation of the Blood in Diseases of the Blood Vessels," published in 1857 and 1858. To us the interest and importance of these essays lies less in the light they threw on the subjects with which they were immediately concerned, than in the fact that they were the first steps in the evolution of that system of wound treatment which was the life-work of Lister, and which is the crowning glory of British surgery.

Of the papers published between 1860 and 1880, that which created the greatest furore at the time of its appearance was J. Y. Simpson's paper on "Acupressure as a Means of Arresting Surgical Hæmorrhage" (1860).

In 1865, in a paper on "Contemporary French Surgery," we get a first glimpse of the powers of accurate observation, the keen critical faculties, the fairness and breadth of view, and the fine literary style of John Duncan. In 1866, Duncan made his first contribution on the subject of the galvano-puncture of aneurysms in describing a case of thoracic aneurysm treated in this way. The following year, in conjunction with T. R. Fraser, he published his classical essay on "The Treatment of Aneurysm by Electrolysis: with an account of an investigation into the action of galvanism on the blood and on œdematous fluids."

A. Gordon's paper on "The Treatment of Fracture of the Lower Extremity of the Radius," Joseph Fayrer's on "The Elephantiasis Scroti of Bengal," and several of Spence's and Mitchell Banks's contributions appeared during this period.

Our survey of the work published in the Journal must stop here. The great majority of the papers published since 1880 are from the pens of men who happily are still living. Their number is so great that it is impossible even to mention them, and to attempt to make any selection would be invidious and might appear presumptuous. Suffice it to say that in the pages of the Journal are enshrined much of the work on which will depend the surgical reputation of many of those who to-day occupy the leading positions in Britain as teachers of surgery and as exponents of the art.

In the space at our disposal it has been impossible adequately to deal with the two epoch-making discoveries of the last century. The discovery of chloroform anæsthesia and the introduction of the antiseptic method of wound treatment are the most treasured traditions of the Edinburgh school, and its scientific fame is indissolubly bound up with the names of Simpson and Lister. History has already recorded its verdict on the importance of these discoveries, and the names of the men to whom we owe them will have their place in the temple of fame among the immortals.

OBSTETRICS.

By Sir Halliday Croom, M.D., F.R.C.S.Ed.

The Journal, in its history of a hundred years, presents a striking picture of the gradual progress of obstetrics. During these years it is interesting to note that obstetrics has, through all the succeeding volumes, formed a very fair share of the articles contributed, and that the proportion of obstetrical work has, within the last two decades, considerably increased.

Obviously, were the gynæcological articles to be included under obstetrics, the increase would be very marked indeed, but here I am dealing with obstetrics alone. While gynæcology has leapt into a prominent place in surgery, obstetrics has moved along very much more slowly, and its advance has been much less pronounced.

The truth is that the pages of medical literature generally do not record any very startling advances in the art of obstetrics. It is apparent that all the operations performed, nay more, the very instruments themselves used in performing them, were all foreshadowed ere the century dawned. With revolving years, of course, there have been mighty improvements—improvements in technique, in operation, and in the instruments themselves: but yet great as these improvements have been, no very original operation, no absolutely original instruments have been devised. The forceps have been modified, altered, improved, beyond doubt. The scope of their use as a life-saving instrument has been increased, but the forceps is two centuries old. The operation of embryulcia has been improved in various ways, but the operation of embryulcia is as old as the time of Hippocrates. The operation of turning is as old as Ambroise Paré, and the induction of premature labour was a recognised operation before the last century began. The operation of symphysiotomy, as originally suggested by Leverin Pineau in 1575, or as modified by Sigault and Le Roy in 1768, which at that time was with justice condemned, as recently produced, has in all probability a future before it. The American operation of gastro-elytrotomy is an improvement on an operation that was introduced by Jörg in the beginning of the century. A closer acquaintance with the mechanism of labour and an early recognition of pelvic deformities have made it possible to avoid a sacrificial operation by the performance of Caesarean section. Furthermore, perhaps the greatest of all the improvements in obstetrics is not in operations at all, but rather in preventive medicine. One cannot fail to be struck with the enormous advance of preventive medicine in all branches, and in obstetrics prevention has advanced as well.

It is true that at the present day we are able to deal successfully with most of the complications that occur in obstetrics; but then this knowledge has grown extremely slowly, and, unlike the great epoch-making changes in surgery generally, and in medicine, obstetrics has crept along with slow, but not uncertain, steps.

Beyond the possibility of a doubt, the two discoveries that have rendered the greatest benefits to humanity, and made the advances that have taken place in obstetrics possible, are those of anæsthesia by James Young Simpson, and the introduction of antiseptics by Joseph Lister, both of whom have added lustre to the pages of this Journal.

When we consider the extreme antiquity of the art of obstetrics, and the length of time that its practice remained solely in the hands of untutored midwives, its extraordinary development, in the environment of gross ignorance and superstition, is much to be wondered at. The last hundred years have not chronicled any very startling or absolutely novel development of the art; but comparing the last hundred years with the centuries preceding, one would be disposed to say that, although the art had not made any very startling advances, the science of obstetrics had gradually been evolved. From being an art practised crudely, it has, during the last hundred years, become a comparatively accurate science, and it is the scientific part of midwifery which has developed more specially than the practical side.

While it is true that all the operations practised at the present day were known in one form or another in the beginning of the century; while it is equally true that all the instruments which are used now were shadowed forth then; while it is true that many of the manipulations and forms of treatment were as well recognised as they are now, yet they have all become perfected; and, moreover, not only are the instruments improved and the methods of treatment perfected, but all those operations, manipulations, and forms of treatment are now carried out on a firm scientific basis, and it is this scientific advance which marks the present century.

The practice of the art also held an unenviable position in the profession, and, notwithstanding the works of Hunter, Denman, Hamilton, Burns, and others in this country, and of Michaelis, Dubois, Cost, Naegele, and others abroad, the practitioners of obstetrics were looked down upon by the physicians and surgeons as men engaged in an inferior sort of art. The College of Physicians of London and the College of Surgeons of England did not examine in midwifery; and it was only during the century that has just closed that a determined effort has been made to raise obstetrics to a position worthy of its important interests; and in 1825 an Obstetrical Society was formed in London, in 1838 in Dublin, and in 1839 in Edinburgh, and quite the majority of the papers that have appeared in this Journal in obstetrics have seen the light first of all in the Obstetrical Society of Edinburgh.

This Journal is especially indebted to Dr. Underhill for contributing to its pages what he modestly calls an address, but what is in reality a most exhaustive and interesting history of the Obstetrical Society of Edinburgh.

It could serve no good purpose to enumerate in detail the various papers that have been written during the hundred years that this Journal has existed. It seems to me of much more advantage to pick out those which have to a greater or less extent been in distinct touch with the progress of the science or art. Important though they are, the mere record of cases does not go far in the general march of science. First and foremost, unquestionably, during the century, stands out the name of Sir James Young Simpson. Above all his predecessors and successors, he stands pre-eminently the first. His work in anæsthetics requires no mention here, because that is common to the medicine of the world. His work on the diseases of the placenta was amongst the earliest contributions to pathological work in obstetrics, and most of it remains accurate even to this day. His numerous articles in this Journal, his work on hospitals, his introduction of forceps—I am not permitted to refer here to his purely surgical work—remain monuments to his industry and genius. There are very few points in obstetrics that his genius has not touched and illuminated, and it is only bare justice to his own reputation, and the reputation he has brought to this school, to mention his name in the forefront.

In respect of this, it is interesting to notice that during these hundred years the Chair of Midwifery in the University has been held but by three occupants—Dr. Hamilton, Sir James Simpson, and the present Professor, who, for the past thirty years, has enriched this Journal by many original contributions, and who, by his generous encouragement of younger writers, has placed this Journal as well as the Edinburgh Obstetrical Department under a debt of gratitude.

During these hundred years papers have appeared touching on most of the points of interest in obstetrics, some making absolutely original discoveries and investigations, and others only communicating cases, but in all the various advances in obstetrics there have been notable additions communicated to this Journal.

Looking first at anatomy, one cannot fail to recognise there the excellent work done in the articulations of the pelvic joints (Matthews Duncan), in the placenta (Sir William Turner), in the anatomy of labour (Barbour), in the anatomy of the floor of the pelvis (Simpson and Berry Hart), in the anatomy of extra-uterine pregnancy (Hart and Carter), in the anatomy of the ovary (Foulis), in the position of the uterus and ovaries in the child (Symington), and in the cervix uteri in pregnancy (Matthews Duncan, Angus Macdonald, Barbour). These are the outstanding anatomical papers that have added richly to our knowledge of the subject, and to the credit of the school, and all of them have marked distinct advances in the scientific study of the subject.

The physiological papers have been less numerous. Amongst them, perhaps the most interesting, from a practical point of view, is that by Milne Murray on "The Physiological and Therapeutic Action of Hot Water."

To the obstetrician, the history of the forceps is an interesting and valuable one. From its introduction by Chamberlain, and its modifications by Levret and Smellie, endless modifications have been devised. In this Journal three special forms of forceps fall to be recorded—first, those of Ziegler, with what he defined as his male and female blade; second, the enormous advances made by Sir James Simpson in devising a pair of forceps that are equally useful both in the high and low operation, and which is a form of forceps that in response to his teaching has been employed most commonly by those taught in the Edinburgh Medical School. The next great advance, so far as this Journal is concerned, was the application of the axis-traction rods to Sir James Simpson's forceps by Professor A. R. Simpson. This, one may safely say, has brought the forceps absolutely up to date, and no more perfect instrument has as yet been devised.

In the columns of this Journal various modifications and alterations in the forceps have been recorded, but these are the three main varieties, to which special attention has to be called. It would be beyond the scope of the present review to discuss these various points in detail. The value of these three varieties of forceps have been fully discussed not only in communications to the Journal, but in the contributions to the Obstetrical Society which have been recorded there; and it is not too much to say that the forceps originally devised by Sir James Simpson and modified by his successor, is the form of forceps that appeals most to scientific obstetricians at the present time.

It would scarcely be possible to leave this question of forceps without referring to the interesting work of Hamilton of Falkirk, whose strong advocacy of the use of the forceps as a means of saving infant life very materially advanced the frequent use of the instrument amongst us, and formed a very important contribution to the Journal.

While still referring to instruments, perhaps the most novel instrument introduced is the basilyst tractor, a method of comminuting the base of the skull and extracting the fœtus afterwards, an instrument which is due to the originality of Professor A. R. Simpson.

In no department of practical obstetrics has there been greater and more striking advances than in Cæsarean section. The early records of the Journal are numerous. Among the early cases of Cæsarean section reported many are merely hearsay. For example, one of the earliest is that reported by Dr. Chisholm in the April number in 1808. This was the case in which a certain M. D'Axiste of Martinique is alleged to have performed the operation of Cæsarean section with success in a patient 3 ft. 10 in. in height, the pelvic diameter being 2 in. The uterus in the first instance, in 1805, was opened by a mesial anterior incision, which went through the placenta. There is no mention of this uterus having been sutured. A living child was the result. The case so appealed to the Captain General that he ordered an account of it to be published in the Government press.

In regard to the second operation on the patient, it was said to have taken place in June 1807. Dr. Chisholm naïvely says that he was told of it by a "gentleman of veracity from Martinique . . . though I do not vouch for the truth of this statement."

In the volume published in 1821, Dr. Henderson records a case in which he performed Cæsarean section. Unlike the former case, this is a most authentic case, in which there is a most excellent clinical report. In all, seven medical gentlemen saw the case, and their united conclusion was the recommendation of Cæsarean section. Dr. Henderson's words fully express the then repute of this operation. He says, "It was now our painful duty to propose the Cæsarean operation." Later in his notes he refers to it as "this terrible operation." The operation took place at noon one day; the patient died at 9 A.M. the following morning. This case was the twenty-fourth recorded in Great Britain. Of the twenty-four, one mother and twelve children survived. In contrasting this with continental records, namely, 231 cases with 139 successes, Dr. Henderson justly remarks, that we must remember that the inherent dangers of the operation are heightened by the circumstances which render it necessary, and that our bad record makes the accoucheur so loath to suggest the operation, that he only agrees to it when the condition of the patient is so critical that there is little hope of a satisfactory result.

In the volume for 1828, John Crichton, surgeon to the Dundee Royal Infirmary, records a case in which he performed Cæsarean section on a girl of 22 who had been in labour for six days. The child survived, but the mother died eight hours after the operation.

In 1830, Dr. M'Kibbin of Belfast records a case of Cæsarean section. Though the patient died within seventeen hours and the child was dead when delivered, the case is of interest in so far as a more anatomical method of opening the uterus was followed; and further, the uterus was only opened after a diagnosis had been made as to the exact placental site.

Here, it is interesting to note that Cæsarean section is reported up to the middle of the century, and then there followed a time in the history of the Journal in which there were no records at all, till within recent years, when Cæsarean section again assumed its position as a scientific operation, which was mainly due to the work of Sänger and others in Germany.

Although Edinburgh is exceptionally free of all pelvic deformities, and consequently Cæsarean section is a less frequent operation here than in other centres, yet the experience of Edinburgh is considerable, and it has now come about that here, as in other schools, with anæsthesia and careful antiseptics, Cæsarean section, in its various forms, has become a safe and easy method of delivery, and the method of delivery which has done a great deal to replace the sacrificial operations of various forms of embryulcia.

The advance in our knowledge of extra-uterine pregnancy has been, to say the least of it, most remarkable. In the beginning of this Journal, many cases are recorded, but they are only pathological curiosities, and it was not until the days of Parry and Tait, the latter of whom contributed freely to this Journal, that this subject rose from being a purely post-mortem study into a condition scientifically understood and dealt with on a distinctly scientific basis.

Many series of cases have been recorded of successful work in extra-uterine pregnancy, and in the elucidation of this subject the scientific papers of Hart and Carter on the placenta, and later of Webster, have added much to our knowledge of the work.

It is interesting to note that early in the sixties, Simpson read a case of extra-uterine pregnancy in which he, along with Thomas Keith, had opened per vaginam, thinking it was hæmatoma, and extracted a small fœtus and placenta, and the patient ultimately recovered.

In dilatation of the cervix uteri by indiarubber bags, Keiller was a pioneer. Various methods of dealing with an undilated cervix, either as part of the operation of premature labour, or when dealing with a morbidly rigid cervix, have been recorded. From the original invention of Keiller, various alterations and improvements have been made in the method of dealing with the cervix uteri, by the dilators of Barnes, Champetier de Ribes, and of Bozzi and Frommer, all of which instruments, with their methods of application, have been illustrated in papers by Macdonald, Simpson, Jardine, Ballantyne.

A review of the maternal mortality in childbed during the present century is interesting, and in this nothing is more striking than the development and fall of lying-in hospitals. There was a time when such institutions were almost extinct, and they have again been resuscitated in our own times. Nobody played a more important part than did Sir James Simpson in the persistent war he carried on against the then existing lying-in hospitals and hospitalism, and one cannot but agree that he was actuated by the highest motives in doing so, and that the campaign he carried on against them was ultimately for their best interests.

The history of so-called childbed fever is eminently a ghastly one. It played ravages in the lying-in hospitals, and for a woman in the early days of the century to go into a hospital was tantamount to incurring an enormous risk. The strange fact is that as the century has advanced, the risk of septicæmia in the hospitals has been reduced to a minimum, while the risk to the patient in private practice remains still exceedingly high. This, of course, is obviously due to the adoption of careful antiseptic precautions in the hospitals, while the same care has not been extended to the patients in private practice.

Now, in the pages of the Journal, this matter has been discussed at length. Matthews Duncan, in his monograph in 1870, says that all attempts at ascertaining scientifically the mortality in childbed must be given up. Dr. M'Lintock about the same time stated: "With our great registering machinery all at work, we cannot find out what is the mortality of childbed in London. For my part, I think that obstetrical common sense would be well contented if the true childbed mortality of modern London is at all less than in London of 1660. It is very doubtful if it is even now as low as 1 in 107." Matthews Duncan, after careful investigation, agreed with M'Lintock that the mortality in private practice was not less than 1 in 120.

Although Lister's great discovery was before the world in 1864, it was not until 1870 that antiseptic principles were applied to obstetric practice, and practically banished puerperal fever from our hospitals. Its many details were found too troublesome for general practice, and many of them were abandoned with no great loss. The teaching of Sir James Simpson was that infection is carried chiefly by the hands of attendants, and now this is generally the accepted opinion.

The words of a well-known writer are probably true. He says, "If I were to state that where there was no handling, there would be no septic infection, I should not be very far from the truth." What Simpson taught remains still absolutely true.

Perhaps no subject has received more attention than eclampsia, and this Journal is fruitful in many interesting papers on the subject. The literature of eclampsia generally is endless, and we remain at the present day, so far as pathology and treatment is concerned, much as we were half a century ago. This subject, notwithstanding all that has been written, remains both in pathology and treatment an uncertainty.

In this Journal the various pathological theories have been discussed in detail, from the auto-intoxication theory, the Von Frerich theory, the Traube-Rosenstein theory, and a remarkable paper on "The Essential Pathology of Puerperal Eclampsia" by Angus Macdonald; later, the serum theory and many others, down to the latest of all, that of Helm. Similar attention has been paid to every variety of treatment that has been adopted, from blood-letting, purgatives, sudorifics, especially pilocarpine, chloroform, saline injections, chloral, bromide, down to the latest suggestions of morphia and thyroid extract, and obstetrically from leaving the case severely alone to rapid and immediate delivery by Cæsarean sections, but so far this complication of pregnancy and parturition has as yet defied any definite treatment, or rather, to put it more accurately, no definite line of treatment can be depended upon for a cure, and Sir James Simpson's suggestion of chloroform as a means of arresting the fits remains as true now as it was when originally suggested.

The pathology of the subject has also received ample attention in the Journal, but as yet it is shrouded in darkness.

Placenta prævia has been the subject of a large share of the articles in the Journal. Simpson, Matthews Duncan, Angus Macdonald, A. R. Simpson, Hart, not to mention many others, have contributed much interesting work in this department, and with our increasing knowledge of the anatomy of placenta prævia, its management has become more and more efficient.

The subject of intra-uterine disease and antenatal pathology was first introduced into this Journal by Sir James Simpson, and since then the subject of antenatal pathology and teratology generally has been enriched by the extensive and unwearied labours of Ballantyne. He has made the subject absolutely his own, and his contributions form a very large addition indeed to the work of this Journal.

On the nature and mechanism of spontaneous rupture of the uterus, Macdonald has contributed a most valuable communication, and the same author contributed many interesting and instructive papers on the subject of the relation of heart disease to pregnancy and parturition, which have afterwards become classic in a special monograph. His further work on the risks and treatment of intra-uterine hydrocephalus and of occipito-posterior positions of the vertex were valuable additions to the obstetric records of the Journal. In the pages of the Journal have appeared regularly from its earliest introduction until the last most interesting and scientific address of Milne Murray, all those numerous addresses, both introductory and valedictory, which have been delivered session after session to the Obstetrical Society of Edinburgh, and which have, one after the other, recorded the onward march of the obstetric art.

I have referred to those whose names have been prominent as workers in obstetrics in this Journal during the past hundred years, but, in conclusion, one cannot fail to refer to the large number of contributors who have recorded many curious and instructive cases, all of which have emphasised special points and illustrated the various important advances both in pathology and treatment.

In reviewing these hundred years, it must be apparent that the Journal has marked the progress of events very pronouncedly, in some respects, very specially; and though it is obvious that we can now deal successfully with most obstetrical complications, yet I trust that he who chronicles the result of another hundred years in this Journal may be able to say that the complication that yet defies us, namely, eclampsia, may be reduced by that time to a simple pathology and an even and uniform treatment. Perhaps he may even be able to record that puerperal mortality, both maternal and infantile, has fallen, both in hospitals and in private practice, to nil. Perhaps he may be able to record that, by an improved morale and régime, syphilis, the curse of our increased death-rate, may have disappeared, and that obstetrics may by that time have advanced into an exact science.

GYNÆCOLOGY.

By F. W. N. Haultain, M.D., F.R.C.P.Ed.

There is perhaps no branch of medical science whose development is more identified with the Edinburgh School than gynæcology; thanks, particularly, to J. Y. Simpson, Thomas Keith, and Angus Macdonald, and naturally, as their work is reflected in the pages of the Journal, they are of more than passing interest.

A century ago, when the first numbers were published, gynæcology could hardly be said to exist, except, perhaps, as a subsidiary appendage to general medicine. Now, as is well known, it has earned the position of being a highly specialised branch of surgery, on which the general surgeon looks with such jealous eyes that its very existence as a "speciality" is in the utmost jeopardy. This marked metamorphosis can be interestingly traced throughout the Journal.

In the early years, leeches and blisters were the general panacea for practically all pelvic conditions, be they "phlegmon" or new growths. Uterine fibromyomata, according to Drew in 1810, were wholly out of reach of the knife, and were to be treated in the manner described, while the later numbers of the Journal team with tables of statistics, showing the removal of these and other pelvic growths with an astonishingly low and rapidly vanishing mortality.

As is natural to expect, gynæcological subjects are at first mainly conspicuous by their absence, except the record of cases which died or recovered from force of circumstances over which the practitioner had little or no control. There is little to attract attention, unless one considers cases of pregnancy and labour complicated by morbid pelvic conditions. In this connection a case of vaginal ovariotomy with recovery is interesting, and is recorded by Drew in 1805. This and similar cases come more under midwifery, but show that, when in extremes obstetrically, surgical procedures were adopted with success, while similar methods were studiously avoided under ordinary conditions.

It would thus seem as if the obstetrician jealously guarded his reputation, while as a physician similar diseases were allowed *carte blanche* to destroy their victims. This is to be accounted for by the fact that the obstetrician was a physician without surgical leanings—a condition which existed for, at least, the first fifty years of the life of the Journal. After this time, however, the surgical instincts of Simpson, and particularly Thomas Keith, began to make their mark, and the first seeds sown of the surgical obstetrician or gynæcologist. For fifty years the blend has proved most successful, but signs of dissolution are not far to seek; the advances of gynæcological surgery, particularly in the region of the abdomen, having isolated it almost entirely from its obstetric foster-mother.

As is to be expected, the writings of Simpson are chiefly obstetric in character, but an interesting case of removal of a malignant cervix with subsequent pregnancy, shows the surgical bent of the author.

The subject with which perhaps the Journal is most closely identified is that of ovariotomy, which may be said to be the pioneer operation of abdominal surgery. In this connection we have a paper by Nathan Smith of Yale, recording a successful result in 1822. Though anticipated by M'Dowell in 1809, the method of operating shows distinct signs of advance. He made a mesial incision as compared to the lateral incision by the previous operator. The tumour was tapped in the orthodox fashion of present-day surgery, and the pedicle was tied with a leather lace, which may legitimately be said to be the precursor of the kangaroo tendon. The wound was closed simply by the aid of plaster, a striking difference to the present tedious process of sewing up in layers.

In 1824, Lizars, surgeon in our own hospital, publishes an interesting series of three cases, the first performed in Great Britain; at the same time he describes the operation as performed by M'Dowell, 1809-1816.

Some hints are thrown out in this paper which are attended to at the present day; thus, the necessity of operating in a well-heated room, and emptying the bladder and rectum, are insisted on. Unfortunately the diagnosis then as now of abdominal swelling seems to have presented the same difficulty, as, in spite of a close examination by the most able physicians in Edinburgh and other centres, the ovarian tumour was represented by a very fat omentum and distended intestines. From the mere fact, however, that he had been able, without harm, to trespass upon the holy ground of the peritoneum, Lizars was stimulated to again undertake the operation, the first of which was successful, whilst the second proved fatal.

About twenty years afterwards, Clay published a series of five cases, showing considerable variation in the technique of the operation. In his cases he removed the tumour entire without previous tapping, which necessitated an incision extending from pubes to ensiform cartilage. The pedicle was tied in two sections, and the ligatures were brought externally through the lower end of the abdominal incision, where they subsequently were detached by sloughing. By these means he shows two deaths and three recoveries.

A slight modification in the treatment of the pedicle is next described by Walne (1842-1844), who, besides tying in two portions, applied a reinforcing mass ligature—in every way comparable to the present so-called Bantock knot. From an analysis of twelve cases operated on, the same author shows a general mortality of

33 per cent., and succinctly sums up his attitude towards the procedure in the following way:—"These results cannot fail to satisfy every one but those who take this means of bringing themselves into notoriety, that the abdominal section for the removal of ovarian tumours is uncalled for, is a useless sacrifice of human life, and never can become one of the legitimate operations in surgery."

Lee, in a critical analysis of 162 cases compiled in 1850, seems to share the same opinion. He bases his argument on the fact that fifty-nine deaths occurred in 162 cases, out of which number in sixty the tumour was irremovable.

In 1863, Thomas Keith, after an experience of two deaths in five cases, agrees with the dictum of Mr. William Hunter, that "the patient would have the best chance of living longest under ovarian dropsy who does least to get rid of it." Fortunately, this pessimistic vein of thought does not seem to have thwarted his efforts towards the improvement of the operation, for in 1865 he gives a record of thirty-five cases with nine deaths. This improvement he attributes to the extra-abdominal treatment of the pedicle by means of his clamp, and careful peritoneal toilette. From this time onwards, however, he seems to have superseded the clamp by cauterisation of the pedicle, and shows greatly improved statistics of six deaths in seventy-two sections. His views, as published by his son, on the use of antiseptics, so far as the spray is concerned, are extremely interesting, as it is shown that he had a mortality of 16·6 per cent. with carbolic spray, one death in two cases with boro-glycerine spray, and only one death in the remainder of the cases where the spray was not used.

Complications of ovariotomy are represented by papers from Thomas Keith and Angus Macdonald, on suppurating ovarian cyst and intraperitoneal rupture leading to pseudomyxoma peritonei, respectively.

Inflammatory affections of the appendages is discussed from the fountainhead by an able article from Lawson Tait, and the publication of a lecture before the students at the University. In this he pays special attention to their origin from latent gonorrhœa in the male, and particularly impresses the importance of their removal. The author's characteristic pugilistic tendency is, in the former communication, well exemplified—a tirade against Spencer Wells being not the least interesting item of the paper. The same author publishes a case of death from strangulated ovarian tumour.

As is natural to expect, until recent numbers, the radical treatment of fibromyoma of the uterus is practically wanting. A. R. Simpson, in 1878, describes these tumours from their clinical and histological aspect, but practically confines his record of treatment to the removal of the stalked intra-uterine variety, and the treatment of the other varieties by medicinal means. Seven years later, however, Thomas Keith comes forward with his classic record of ten successful cases of abdominal hysterectomy. In this he clearly lays down the methods of ligature and section of the broad ligaments, and stripping the anterior layer of peritoneum with the bladder down from the tumour, as adopted at the present time. He, however, treated the stump extra-abdominally by the clamp and serre-nœud.

A previous record communicated by his son, Skene Keith, in 1883, of ten hysterectomies, is quoted in the following terms:—"These were the only cases of fibrous tumours of the uterus which left the Royal Infirmary perfectly cured, and probably the only ones from any general hospital in the country."

In spite of these successes, the difficulties and dangers of these operations seem to have impressed themselves so much on the minds of the Keiths, that we find them discontinuing the procedure in favour of the more conservative palliative treatment by electricity—(Skene Keith—"The Treatment of Fibroid Tumour of the Uterus by Electricity," 1888). Fortunately, however, this retrograde step has not been followed, as shown in the Journal, by the published successful statistics of present-day operators, such as Croom, Brewis, Haultain, and others.

The subject of extra-uterine gestation is dealt with by Angus Macdonald, who publishes a record of two cases of ectopic pregnancy in 1884, and gives evidence of his boldness and skill as an operator, by describing how in an advanced case he resected 6 in. of gangrenous gut adherent to the sac, and sutured it by the end-to-end method; at the same time closing a fæcal fistula, with ultimate recovery of the patient. In this connection he strongly insists upon the early operative treatment of the cases.

So far as gynæcology is concerned, from what has been written in the previous pages, it is evident that the work of individual workers in the Edinburgh School, reflected in the Journal, has been one of slow, measured, but sound progress, and cannot fail to impress the readers of the marked ability, care, and thoroughness with which it was performed. Outstanding in front of all rivals is the work of Keith. To many who have known him it must bring back memories difficult to describe, but at the same time vivid in their reality. Doubtless to him not only are those of us with whom he came personally in contact grateful for these memories, but it may be said the world at large must feel that to him it owes the advancement of abdominal surgery to an extent which it is almost impossible to overestimate.

The name of Sir J. Y. Simpson bears its impress on this as on many other associated branches of medicine, that it is almost unnecessary to dwell upon it. Of Tait and Macdonald, we in Edinburgh are similarly proud.

To the *Edinburgh Medical Journal*, as perpetuating the results of their work in its pages, an incontrovertible debt of gratitude must be assigned.

THERAPEUTICS.

By Ralph Stockman, M.D., F.R.C.P.Ed.

Since the now remote times when medicine first became systematised and began to have a literature of its own, the principles which have governed the treatment of disease have been based on a curious mixture of practical experience and theoretical speculation. Whenever a new method of treament has become temporarily or permanently established in professional estimation, a number of ingenious hypotheses as to its mode of action follows at once as a matter of course. As these explanations have been usually derived from the contemporary ideas regarding physiology and pathology, it is clear why so large an amount of therapeutical literature is ephemeral in its value. Far too much attention has been given to theoretical considerations in therapeutics, rather than to rigid methods of observation and criticism, and hence in a very short time a large proportion of the literature becomes out of date and worthless. It is especially difficult to estimate new methods of treatment at their correct value until sufficient time has elapsed for a large experience to accumulate, and if any particular method falls into disuse, the literature recording such experience naturally shares its oblivion. Hence, although there is much writing on therapeutical subjects, the actual advance over any short period of time is small. In a century, however, it is always considerable, and during the nineteenth century has been so great as to make it a matter of difficulty in the compass of a few pages to describe or discuss adequately the manifold and far-reaching changes which have taken place in our practice, and still more perhaps in our ideas, regarding the treatment of disease. One hundred years ago there was no science of pathology as we now understand the term, bacteriology was undreamt of, and physiology had just begun to be felt as a force in medical thought. Chemistry also was in a very undeveloped condition, and although it had already given many valuable remedies to our pharmacopœias, yet the present growth on a large industrial scale, with its many services to medicine, had not taken place. Therapeutics was in an equally unsatisfactory position. The desire to heal or treat disease and suffering has been the origin and motive of all medical science and practice, and in early times medical learning and skill consisted merely of an empirical knowledge of the value of certain remedies, and the proper times and methods of applying them. By the end of the eighteenth century this had grown to very respectable dimensions, and a large amount of valuable experience in clinical therapeutics had been gradually accumulated, and was being applied in daily practice. The practical value of such drugs as opium, iron, mercurials, aloes, hyoscyamus, scammony, and many others of equal importance, was well understood, and the forms in which they were administered were, speaking generally, much the same as at the present day. Nor was equal skill in their application wanting. But too much was often expected from them in the way of curative results, and in the absence of a sufficient knowledge of physiology and pathology there was no clue to their modes of action. In 1809, Magendie, by his researches on the *Upas Tieuté*, a plant having a strychnine-like action, may be considered to have first thoroughly investigated, on modern lines, the physiological action of a remedial substance, an example which was ably followed by Claud Bernard, and since his time by a long train of successors. Pharmacology also received a great impetus by the foundation, about 1850, by Buchheim of Dorpat, of the first laboratory specially devoted to its study, while his writings greatly stimulated systematic scientific research in all branches of the subject. Almost simultaneously the foundations of our present knowledge of physiological chemistry were being laid, and although the superstructure is still very imperfect, its influence on therapeutics has already been considerable. These two sciences, both products of the nineteenth century, have done yeoman service in putting the treatment of disease on a more rational and secure footing. For overwhelming evidence of this we need only compare the text-books of the present day with those of fifty years ago, the latter being filled, almost to the exclusion of everything else, with wearisome descriptions of the materia medica.

At the beginning of the nineteenth century iodine was as yet undiscovered, not a single alkaloid had been isolated in a pure state, and although cinchona bark, opium, and belladonna were being freely used as remedies, quinine, morphine, and atropine were as yet unknown. Morphine was first described in 1814; iodine, discovered in 1812, was first used by Coindet for goitre in 1820; and it was not till 1835 that the present doses of potassium iodide were advocated by Wallace of Dublin. Till then it had been considered poisonous, except in very small amounts. Arsenic and ergot, although long known as remedies, were slowly obtaining their present applications and reputation; while antimony, opium, mercurials, and bleeding held perhaps the premier places in professional estimation as remedies. To take a few other examples, the value of chloral hydrate as a hypnotic was announced by Liebreich in 1869, jaborandi was introduced into European practice in 1874, salicylic acid was first used in acute rheumatism in 1875, the local anæsthetic action of cocaine was utilised in 1884, the thyroid gland was used in myxœdema by Murray in 1891, and in 1893 Behring gave to the world his great discovery of an antitoxic serum for diphtheria. Each of these advances has stimulated research, in some cases to an extraordinary degree, and has given rise to a multitude of new drugs of a similar kind. The number of hypnotics which have followed on chloral hydrate is legion, while it is difficult to keep a record even of the numerous substitutes which have been propossd for salicylic acid and cocaine. The rapid and satisfactory effect of thyroid preparations in myxœdema roused high hopes of the possible results to be obtained from the use of other glands and their secretions, but on the whole the result has been disappointing. In a limited way the suprarenal gland has proved of value as a vaso-constrictor. Much the same verdict must unfortunately be passed on the numerous attempts to treat infectious diseases with specific serums. Diphtheria antitoxin has proved a great success. Some of the others have attained to a somewhat shaky reputation, but the great bulk of such preparations are failures so far as regards the actual treatment of cases in practice. There is good ground for hoping, however, that with increased knowledge and improved methods this may be altered. Alongside these we have Pasteur's treatment of hydrophobia, the introduction into medical use of such drugs as potassium bromide, Calabar bean, strophanthus, amyl nitrite, cod-liver oil, and nux vomica, and, what is perhaps of equal importance, an exact appreciation of the physiological actions of many long-used remedial agents. Among these last may be cited the action of digitalis on the circulatory system, of quinine in malaria, and of iron in anæmia. Chief among the important contributions to therapeutics has been, however, the introduction of substances capable of producing general anæsthesia, beginning with nitrous oxide in 1844, and ether in 1847. It was this which rendered possible the full utilisation of Lister's brilliant researches regarding the treatment of wounds, and, taken together, these two discoveries may be regarded as having diminished human suffering in a greater degree than any other therapeutical measures. Their only rival in this respect is opium. The original antiseptic treatment of Lister gave rise to the use of many medicinal substances, such as carbolic acid, boric acid, and iodoform, but the importance of these, and of many other drugs of the same class, has been greatly diminished by the introduction of aseptic surgical methods, an advance which also must be classed among the outstanding therapeutical events of recent years.

The newer methods of treating pulmonary tubercle are also worthy of mention, even in the shortest sketch of therapeutical progress, while pneumonia and other fevers of short duration are much less actively interfered with than was the case a century ago.

Of first-rate importance also is the great improvement which has taken place in the organisation and training of sick-nurses, a revolution, as it may justly be termed, which has been of incalculable advantage both to patients and doctors. Lastly, and merely in passing, attention may be drawn to the more general adoption of mechanical and physical methods of treating disease, such as hydrotherapy, massage, aerotherapy, and medical gymnastics.

In glancing through the more strictly therapeutical contributions to the *Edinburgh Medical Journal* during the last century, the growth of knowledge and of wider and more exact ideas regarding treatment are faithfully reflected in its pages. In the early volumes there are reports of many methods of treatment now obsolete, such as the use of tobacco in enemata, the treatment of hydrophobia by bleeding, the use of blisters to cause absorption of pus, many forgotten cures for pulmonary consumption, and "the employment of gunpowder as a medicine in various morbid states of the gastro-enteric mucous membrane." In 1813 there is a valuable paper by G. Playfair "On the Good Effects of a Combination of Ipecacuan and Laudanum in Dysentery," and later, accounts of the introduction of croton oil as a purgative, and of cubebs as a urinary antiseptic. In vol. xviii., Ranken gives "An Account of some Experiments made upon Dogs bitten by the Cobra de Capello," in which he advises the administration of ammonia, alcohol, and spirit of turpentine to aid recovery. Much later, Fayrer's very elaborate papers on the same subject occupy many pages. Experiments with digitalis, the climatic treatment of consumption, the action of iodine in goitre, the value of ergot, and many similar subjects, are described and discussed. In 1829 we find Stokes of Dublin protesting against the practice of bleeding in malarial fever, then a common disease in certain parts of this country, and stating his opinion that these cases are never cured until quinine has been freely administered. In vol. xli., Henry gives a description of his well-known mixture of Epsom salts, showing a somewhat exaggerated opinion of its remedial virtues. Towards the middle of the century papers begin to appear on the pharmacological actions of such drugs as hydrocyanic acid, bromine, ergot, atropine, bebeerine, and a very large number on all aspects of the chloroform question. Among these is an analysis by Snow of all the fatal cases which had occurred up to 1849. Later, there are articles by Hughes Bennett on intratracheal injections in pulmonary disease, by Begbie on arsenic, by Fraser on the Calabar bean, by Craig Maclagan on the arsenic-eaters of Styria, and by George W. Balfour on potassium iodide, on cardiac therapeutics, and many other subjects. In quite recent times the treatment of myxœdema, of tubercle, of diabetes, and of many other important diseases, receives adequate treatment at the hands of numerous contributors.

During its long existence the Journal has regularly supplied abstracts of the more valuable papers on therapeutical subjects appearing in current medical literature, and in this respect also has rendered good service to all branches of practical medicine.

MEDICAL JURISPRUDENCE.

By Harvey Littlejohn, M.B., F.R.C.S.Ed.

Just as, in passing under review a century of history, it is necessary that we should bear in mind the changing conditions in the life, manners, and customs of a people, in order to form a just appreciation of certain actions and events, so also, in considering the contributions to any branch of science during a hundred years, it is essential that we should recall the state of knowledge which existed in that science at various periods, but more especially in the earliest years.

Regarded from this aspect, what was the position of medical jurisprudence at the beginning of the last century? On the Continent, in Germany, France, and Italy, numerous workers had been engaged for many years in its study, and it had assumed the position of a separate and important branch of medicine. Many writers had published valuable treatises and monographs dealing with forensic medicine as a whole or some of its special departments, while in Germany at least the subject was taught in several of its universities by specially appointed professors.

The latter part of the eighteenth century had been a period of great activity abroad amongst medico-legal writers, and the subject had made great advances. In Germany the lectures of Haller and the well-known works of Plenck, Loder, and Metzger appeared, while in France writers were not less active, as is testified by the publications of Louis, Chaussier, and Foderé, the latter's celebrated "Traité de médecine legale" appearing in 1798.

In this country, up till the beginning of last century, medical jurisprudence was practically an unknown science. There was no treatise dealing with forensic medicine as a whole, if we except a small book published in 1788 by Samuel Farr, entitled "The Elements of Medical Jurisprudence," which was merely an abridgment of an old work by Fazelius. It is true that certain medico-legal questions had been incidentally discussed in the writings of Monro, Percival, and by John and William Hunter, but the study of forensic medicine was not pursued as a separate science, and it found no place in the teaching of our medical schools. The knowledge possessed by members of the profession was thus very imperfect, and such as there was had to be borrowed almost entirely from foreign sources.

Such was the state of matters when the *Edinburgh Medical and Surgical Journal* began its existence, and the study of medical jurisprudence in this country may be said to have only commenced then. The first lectures ever delivered in the United Kingdom upon the subject were given in Edinburgh in the year 1801 by Andrew Duncan, senior, who had urged its importance upon the public for some years, and who, I believe, presented a memorial dealing with the question to the patrons of the University in 1798.

These lectures were, however, merely voluntary, and it was not until 1806 that his son, Andrew Duncan, junior, received the appointment of Professor of Medical Jurisprudence.

From this date onwards the Journal furnished some of the most important contributions which were made to the science during the first fifty years of last century, and the task of providing a short review of medical jurisprudence as portrayed in its pages is by no means an easy one.

They abound in accounts of cases illustrating every branch of medico-legal work, and it is no exaggeration to say that the articles upon this branch of medicine largely contributed to the early recognition of the Journal on the Continent as one of, if not the, most important medical publications in this country. The early leaning which it showed towards what was then practically a new and unknown science may be accounted for in various ways. The reputation of Edinburgh University as a seat of medical learning was very great at this time, with the result that large numbers came from England, the colonies, and other countries to study and obtain the degree of doctor of medicine. These graduates afterwards returned home, but, stimulated by the lectures of the two Duncans, and having had their interest aroused in the new subject, they communicated the results of their observations on various medico-legal matters to the Journal from time to time. In addition, however, the strong influence which French teaching exerted over our Scottish universities must be remembered, and there is abundant evidence that our activity here only reflected the increased interest and stimulus which was being given to the science in France through the writings of Foderé and Orfila.

Be this as it may, the fact is apparent, that the importance of medical jurisprudence was quickly recognised and its study largely pursued, with the result that even the earliest numbers of the Journal contain a store of interesting medico-legal cases and admirable résumés of the current foreign literature.

There are not many periodical publications of a century ago or thereabouts, even with greater literary pretensions than a medical journal, which can enthral the ordinary mortal night after night and carry him from volume to volume with unflagging interest, and yet, let any medical man start with volume i., and we unhesitatingly assert that, even if he confine himself to the subject of medical jurisprudence alone, he will never have a dull moment, and his time will be amply rewarded by much useful knowledge and entertainment.

We shall now attempt to give the reader very briefly some idea of the nature and extent of these contributions to medico-legal literature to which we have referred. In the first place, we shall deal with the period of fifteen years from the commencement of the Journal until an event occurred which marked an era in its life and in the history of medical jurisprudence in this country, namely, the appointment of Christison to the professorship on that subject.

The contributions during this period may be classified under the headings of original communications, critical analyses of current literature, and accounts of criminal trials. The original communications are of considerable interest, and chiefly have reference to toxicology. Thus one of the earliest papers is by the distinguished chemist, Bostock, upon the different methods recommended for detecting minute portions of arsenic — an admirable contribution when viewed in the light of the chemical knowledge of that day. Excellent descriptions are given by a number of authors of cases of poisoning with arsenic, oxymuriate of mercury, corrosive sublimate, oxalic acid, nitre, and digitalis, while B. C. Brodie's well-known experiments and observations upon the action of various poisons are recounted in an interesting paper. It is worthy of remark how closely Brodie's observations of 1807 in regard to the effects of arsenic correspond with our knowledge of to-day, and that he recognised then the striking fact which may be stated in his own words: "In whatever way the poison (arsenic) is administered, the inflammation is confined to the stomach and intestines." Amongst other papers, that of Burns of Glasgow, "Observations on the Digestion of the Stomach after Death," is deserving of notice. This question, to which attention was first drawn by John Hunter in his "Observations on Digestion," received thereafter a great deal of attention, and Burns's paper shows that our knowledge of the subject has not advanced very much since his day.

The "Critical Analyses," however, overshadow in interest and importance the original contributions at this period, since, in the majority, the critic allows himself considerable latitude both as regards space as well as the method of treating his subject, so that these analyses furnish the reader with concise résumés on various medico-legal questions which are at once instructive and of great practical value. Thus we find such reviews of the well-known works of Mahon on "The Signs of Murder in New-born Children," of Orfila's "Traité des poisons," of Tartra's "Traité de l'empoisonnement par l'acide nitrique," and many others.

The early accounts of criminal trials are also interesting, more especially that of Charles Angus for the murder in 1808 of Margaret Burns, in which the two chief medical questions involved were whether the deceased had died from the effects of poison, and whether she had been delivered of a child recently before death. From the account of the post-mortem examination, it is plain that the answers to these questions would have occasioned no difficulty at the present day, although they gave rise to a copious and somewhat acrimonious correspondence after the trial. The trial of William Pizzy and Mary Codd for procuring abortion raises some interesting points; while another, which created a great stir at the time, and which has long been forgotten even in the sporting world, but which has had its prototype in more recent times, was that of Daniel Dawson for poisoning the Eagle colt with arsenic.

From the year 1822 onwards a name came to be associated with the Journal, and more especially with the subject of medical jurisprudence, which perhaps more than any other tended to make its pages famous. I refer to Christison, who, after graduating in 1819, found himself unexpectedly appointed to the Chair of Medical Jurisprudence, rendered vacant by the translation of Dr. Alison to the Chair of Theory and Physic.

Christison had just returned from Paris, where he had listened to that most persuasive of lecturers, Gay-Lussac, studied analytical chemistry under the great Robiquet, and had become impressed with the teaching of the celebrated Orfila, at that time Professor of Medical Jurisprudence and one of the most popular lecturers in Paris. Orfila had acquired the reputation of being the most forward and successful inquirer of the day, and as Christison has himself recorded, "he studied with untiring energy the action of poisons, the details of their several effects, the mode of detecting them in all varying circumstances, and their antidotes and treatment, till he erected toxicology on a solid foundation as a science." "I did not hear him lecture," Christison goes on to say, "till his course of instruction commenced in April (1821), a few days before I had to take leave of Paris. But I caught somewhat of his spirit, as appeared soon in subsequent events." How soon and how much that "somewhat" of the great Orfila's spirit was is told by the pages of the Journal.

In 1823, the year following his appointment as professor, Christison published along with Coindet "An Experimental Enquiry on Poisoning by Oxalic Acid," which is a model of lucidity and thoroughness, and to which, even at the present day, there is little to be added, and certainly nothing requiring retractation, as the result of more recent investigations upon the subject. At this time poisoning by oxalic acid was practically unknown in France and Germany, although it was by no means an uncommon occurrence in this country. Practically nothing was known about its toxicology, and this investigation not only at once assured Christison's place amongst toxicologists at home and abroad, but also materially enhanced the reputation of the Journal.

For many years thereafter the name and work of Christison dominate the Journal so far as medico-legal matters are concerned, and these years, during which the study of medical jurisprudence was gradually making headway in this country, are full of most valuable and interesting papers by him and other workers. Several admirable analyses, themselves almost monographs upon the subjects reviewed, and which must have been of immense value to those not able to consult the originals, appeared about this time, as, for example, those on Leciaux's "Considerations médico-légales sur l'infanticide," Hutchinson's dissertation on the same subject, and Capuron's "Le médecine légale relative a l'art des accouchements." Paris and Fonblanque's well-known textbook also came in for an extended notice, in all probability written by Christison, and is a learned criticism of existing knowledge in regard to many problems of forensic medicine.

In volume xxii. Christison published an original contribution on "The Detection of Minute Quantities of Arsenic in Mixed Fluids," which materially narrowed the loopholes of escape for the poisoner, and thus promoted the ends of justice, prior to the discovery, at a later period, of the more delicate and certain processes of Marsh and of Reinsch. About this period (1823–1830), valuable papers appeared by Scott on cases of infanticide and upon oxalic acid poisoning, by Martin on "Some of the Accidents of Infanticide," and by Turner on "The Detection of Antimony in Mixed Fluids," while a correspondence conducted with some show of feeling occurs between Dr. Macintosh and Christison in regard to the former's evidence before the High Court of Justiciary in the case of a Mrs. Smith tried for poisoning. In 1828 appeared the first of a series of articles from the pen of Christison which for originality of observation, sound judgment, and clearness of exposition, are entitled to rank high amongst the contributions in this or any other country to the science of forensic medicine. They were entitled "Cases and Observations in Medical Jurisprudence," and are based upon a number of interesting criminal trials in which he was the chief medical expert for the Crown.

The first of these papers deals with the "Imputation of Poisoning," and is a masterly example of the detection of a false accusation of poisoning, and also with the well-known trial of Margaret Wishart for poisoning with arsenic, in which case the rare condition of perforation of the stomach by arsenic is recorded.

The second paper of this series appeared in 1829, and perhaps exceeds in interest any of the others. It deals first with what was then a comparatively new form of crime, the "Disfigurement of the Countenance with Sulphuric Acid." The subject came under Christison's notice owing to several atrocious instances having occurred in Glasgow of this cowardly mode of gratifying revenge, which led the then Lord Advocate to apply for a Bill extending to Scotland, the Ellenborough Act against wounding or maiming, with the addition of a clause dealing with the throwing of corrosive liquids, and awarding for it the punishment of death.

Secondly, this paper reviews the points of medical interest in the celebrated Burke and Hare murders. Christison was the principal medical witness for the Crown, and it was in consequence of the findings at the post-mortem examination made by him and Dr. Newbigging upon the body of Margery Campbell, that he instituted his classic experiments relative to the production and distinguishing characters of post-mortem injuries. A short epitome of the facts in this case is well worth giving. Margery Campbell was a woman about middle age, well nourished, and without a trace of disease in any organ. The body presented the signs of death by asphyxia, usually vague enough, but in this instance particularly so, because the method of the murderers left no external local marks. There were various immaterial bruises on the limbs, which appeared to have been inflicted recently before death. There were no external marks about the neck or face to indicate how respiration had been obstructed. The neck was loose, the ligaments between two of the vertebræ being torn, and a little fluid blood was effused around the investing sheath of the cord and a good deal among the muscles of the neck and back. Nothing was known at this time, Hare not having yet turned "King's evidence," how death was produced, but Christison with great acumen surmised that death was effected by smothering, and that, while the bruises on the legs, etc., were caused during life and shortly before death, the injuries to the vertebræ and neck were the result of post-mortem violence. He instituted experiments upon the bodies of persons shortly after death, and proved that forcible flexure of the head upon the breast practised very soon after death, while the blood is fluid and the blood vessels retain contractility, produced the same appearances of extravasation as found in Margery Campbell. He also carried out experiments as to the production of superficial bruises after death, and showed that they could be caused under certain conditions. These observations were of immense importance to medico-legal science, and their accuracy has never been questioned, while, in the case which originated them, the opinions formed by the medical inspectors as to the *modus operandi* of the murderers was proved to be absolutely correct.

The series of "observations" was continued at short intervals, and both on account of their value and the wide variety of subjects dealt with, deserve to be enumerated, even if space does not permit of more extended notice. Thus we find contributions upon poisoning with arsenic; the process for detecting opium in mixed fluids, and the uncertainty of the chemical analysis in such cases; poisoning with elder flowers and leaves; poisoning with sulphuric acid; on the effects of opium-eating on health and longevity; on the poisonous properties of the bark of the laburnum tree; and an account of two trials "involving the question of burning before and after death." The latter included the results of experiments carried out to determine the distinction between ante- and post-mortem burning, and, as in a similar question regarding injuries, Christison's investigations were not only original, but even to the present day the conclusions he arrived at form the basis of our knowledge on the subject.

Christison's extraordinary literary and scientific activity about this period is evidenced by a critical analysis in the Journal of his "Treatise on Poisons in relation to Medical Jurisprudence, Physiology, and the Practice of Physic," which appeared in 1829. This was not only the first great work in this country on the subject of toxicology, but it ushered in a new era as regards the detection of criminal poisoning. Symptoms, post-mortem appearances, treatment, and the tests for the various poisons commonly used were treated in a philosophical and yet practical manner, and the work not only raised Christison at once to the first place amongst living authorities on the subject, but also gave him a world-wide fame.

From the year 1830 onwards, the names of other writers well known in the annals of forsenic medicine begin to appear in the pages of the Journal. Carswell wrote an exhaustive contribution, "An Enquiry on the Chemical Solution or Digestion of the Coats of the Stomach after Death, with Observations on Softening, Erosion, and Perforation of the Stomach in Man and Animals." Alexander Watson, the subsequent author of the well-known medico-legal treatise on "Homicide by External Violence," wrote in 1831 a paper on the "Medico-Legal Examination of Two Cases of Sudden Death from Wounds." These cases referred to two females who died of hæmorrhage from wounds in the labia majora, and in both of which the defence set up was, that they might have been produced by falls on some sharp object. Watson discusses very ably the probabilities of such a mode of causation, and while possibly he may have been right in concluding that they were produced by intentional violence, yet the fact was not then so well recognised as it is now, that wounds simulating those produced by sharp instruments may be caused in this region by falls. In former days, misconception on this point led to several cases of unjust conviction. Watson has two further papers, in both of which he shows his usual critical acumen and sagacity—one on "Three Medico-Legal Cases of Homicide," in which insanity was pleaded in exculpation; and the other concerning the medico-legal examination of two cases of death from injuries of the head, in which he discusses the interesting and important question of hæmorrhage within the cranial cavity arising from disease and from violence.

In 1833, Francis Ogston, the future Professor of Medical Jurisprudence in Aberdeen University, wrote an exhaustive paper upon

"The Phenomena of the more Advanced Stages of Intoxication, with Cases and Dissections," while some years later we find his name in connection with an admirable article on "The Morbid Appearances in Death by Drowning," which is still referred to in text-books upon the subject.

P. D. Handyside contributed accounts of some remarkable cases of suicide—one on "Cut Throat, with Observations on the Fatal Issue of the Rapid Introduction of Air into the Circulation during Surgical Operations," and another, which remains practically unique, in which a woman choked herself by stuffing a piece of linen into her mouth. In this latter case, the girl, who was undergoing a term of imprisonment, was found dead in her cell, and so natural was the appearance of the body that death was not attributed to a violent cause. There being no relatives, the body went to the anatomy rooms, and it was only when Handyside proposed to demonstrate to his class the muscles of mastication that the real cause of death was discovered.

The period about 1840 is particularly rich in contributors, with names which are at once a guarantee for the high character of their articles. Thus we find Alexander Peddie writing on "Cases of Poisoning with Fungi"; Traill, the successor of Christison in the Chair of Medical Jurisprudence, with a paper, "Observations on a Method of employing Ammonio-Nitrate of Silver as a Test for Demonstrating very Minute Quantities of Arsenic"; Watson on "Cases of Poisoning by Arsenic, Sulphuric Acid, and Muriate of Mercury"; Craigie on "Suicidal Poisoning by Means of Concentrated Sulphuric Acid"; Skae, Lecturer on Forensic Medicine in the Extra-Mural School, on "Cases in Legal Medicine, with Remarks"; and Douglas Maclagan, who gives an account of his well-known investigation on "The Action of Hydrated Sesquioxide of Iron in the Treatment of Arsenical Poisoning." We cannot conclude this list without mentioning, even at the risk of wearying the reader, three more articles of great merit. One is by Robert Paterson of Leith, upon "Pseudo-Morbid Appearances in the Brain and its Membranes," which draws attention to the great medico-legal importance of differentiating these from pathological states which existed during the life; the second, that of W. A. Guy, Professor of Forensic Medicine at King's College, and afterwards author of the well-known text-book, who contributed an able and exhaustive article upon "The Static Lung Tests," which attracted great attention both in this country and abroad; while the third is an account by John Hughes Bennett of a "Case of Poisoning by Hemlock."

Our review of the Journal in the first half of last century cannot close without one more reference to Christison, and an investigation by him which we think may be held to come within the province of medical jurisprudence. We refer to his report to the Royal College of Physicians of Edinburgh on "The Adulteration of Drugs." His attention was first called to the subject several years previously, by failing in an experiment before his class to obtain the reaction for bichloride of mercury with iodide of potassium. On proceeding to inquire into the cause, he discovered that the iodide consisted of 80 per cent. of carbonate of potash, 10 per cent. of water, and only 10 per cent. of iodide of potassium. This atrocious adulteration was knowingly sold by a Glasgow firm all over Britain, and accounted for the failures often complained of at that time in the use of the salt as a remedy in medical practice. Adulteration of other drugs was also rife; in fact, Christison states in his report, "It may be safely averred that few medicines in general use escape occasional sophistication: that some are scarcely ever pure; that the impurities are frequently so great as to render the articles nearly or entirely inefficacious, and that medicines of this kind are to be found occasionally in the shops of even most respectable druggists." Christison's report, and the simultaneous inquiries of Dr. Pereira in London, were directly responsible for the marked improvement which soon took place in the purity of drugs, and more especially in the means which were adopted by the Legislature to prevent sophistication.

The decennium 1850–1860 was a period of great activity and interest in the field of medical jurisprudence, so far as the Journal is concerned. This was due to several causes, amongst the chief of which may be mentioned the appearance in its pages of several new contributors whose articles are of great interest and importance; and, secondly, on account of the reports of a remarkable series of celebrated criminal trials which occurred about this time, and which involved questions of great medico-legal importance. In 1852 an article appears from the pen of one of the greatest medical jurists of this or any other country, Alfred Swaine Taylor. It is entitled simply "Remarks on Death by Strangulation," and deals with the case of Thomas Drory, who was tried at Chelmsford Lent Assizes in 1851 for the murder, by strangulation, of Jael Denny. It is impossible, within the limits of such a review as this, to refer, however briefly, to the many medico-legal questions of the highest importance which arose in this case, and to show how each problem or difficulty was successfully met and overcome by the skill and admirable logic of Taylor. The article should be read by every student of forensic medicine; and although now more than half a century old, there will be found nothing to alter in the light of more recent knowledge, nothing to add to it as a model of medico-legal exposition and reasoning.

To those who are interested in the mysteries of spontaneous combustion of the human body, we can commend an article published in the same year as the above, giving a translation of Tardieu's reflections upon this subject, occasioned by the notorious case of supposed spontaneous combustion of the Countess of

Görlitz at Darmstadt in 1847, as also an alleged case in Morayshire, which the reporter treats with commendable scepticism. The last two volumes of the old series of the Journal contain an article from the pen of W. T. Gairdner on "Suggestions in regard to the Performance of Post-Mortem Examinations," which, notwithstanding all that has since then been published upon the subject, will well repay perusal.

The first volume of the new series, published in 1856, contains three papers dealing with death from violent asphyxia, by Wilson, Keiller, and Littlejohn respectively, and all of remarkable interest.

Wilson's article is entitled "Case of Imputed Murder by Manual Strangulation, with Observations," and refers to the case of a woman who was said to have died suddenly from natural causes. On making a post-mortem examination, however, Wilson found all the important organs in a healthy condition, with the exception of the larynx. The thyroid and cricoid cartilages were fractured, and there were extravasations of blood in the various tissues of the neck, which led him to the conclusion that death had resulted from manual strangulation. There was no direct evidence of murder against the husband, who had been arrested, and the case rested largely upon the facts adduced by the medical witnesses. The defence set up was that the deceased had fallen accidentally while in a state of drunkenness, and had thus produced the fatal injuries above mentioned. Wilson, on the other hand, stated his conviction of the impossibility of their having been produced by a simple fall, as, for example, against a chair. The jury, however, under direction from the judge, acquitted the prisoner. There can be little doubt that Wilson was right in his contention of the great rarity of fracture of the larynx as a result of violence apart from manual strangulation. Dr. Keiller, at that time Lecturer on Medical Jurisprudence at Surgeons' Hall, dealing with the medico-legal aspects of this same case, carried out experiments with the view of determining the amount of injury to the larynx which might be expected to follow a fall upon this organ, and arrived at conclusions identical with those of Wilson. His paper is illustrated by many interesting cases, and is a valuable contribution to the subject.

Of the "Cases of Homicidal and Accidental Suffocation, with Remarks," recorded by Littlejohn, the present occupant of the Chair of Forensic Medicine, one refers to the murder of an old woman in a manner which is probably still without parallel in the annals of crime. There had been no suspicion of foul play until it was revealed at the post-mortem examination. The main result of this inspection is best related in the author's own words: "On attempting to remove the tongue and larynx for examination, a hard resisting mass was felt impacted at the back of the throat. . . . The tongue and lower portions of the pharynx were then dissected out, when the obstruction proved to be an ordinary quart bottle cork inserted tightly in the upper part of the larynx. . . . The sealed end of the cork was uppermost." A man who lived in the house, and who is reported to have been of evil repute, and to have boasted on one occasion that he knew a method of getting rid of people which could not be found out, was tried for the murder, but the charge was found "not proven." For the defence, it was suggested that the deceased might have swallowed the cork while attempting to draw it from a bottle with her teeth, but the fact of the sealed end being uppermost negatived such a suggestion.

In the same volume, Christison gives an "Account of a late remarkable Trial for Poisoning with Arsenic." This refers to the notorious Wooler case, in which there were many questions of great interest to the medical profession. We shall only mention one of these here, but one which gave rise to much discussion throughout the country, and which, even at the present day, possesses great practical importance for the medical practitioner, namely, what is a medical man's duty when he suspects that his patient labours under the operation of poison? The judge in the case animadverted upon the conduct of the medical men engaged, and stated that "they ought to have communicated their suspicion of poisoning to the husband, if they did not suspect him, and if they did suspect him, they ought to have gone before a magistrate, and not have gone on from the 8th of June to the 27th seeing the woman murdered before their eyes."

Christison discusses these two lines of conduct on the part of medical men with great ability, and shows how dangerous it would be for a medical man and for the ends of justice to follow either course upon a mere suspicion of poisoning. There is a third course, he argues, which in his opinion is the fittest of all, namely, "when the medical attendant is satisfied of the fact of poisoning, he should communicate his conviction to the patient himself. His predicament in every other way is so embarrassing, that he ought not to be deterred by the chance of injury to his patient from making even so dreadful a disclosure." At a meeting of the Medico-Chirurgical Society, in which this question was discussed, it is interesting to note that the procedure advocated by Christison received the approval of Dr. Andrew Wood, Professor Miller, Dr. W. T. Gairdner, and of the Society as a whole.

The celebrated trial of Madeleine Smith, which took place in 1857, gave rise to a communication from Christison on "The Quantity of Poison which has been found in the Stomach in Murder by Poisoning with Arsenic," and also to the record of an interesting series of cases of poisoning by arsenic by Dr. Paterson of Leith, which show how frequent suicidal poisoning was at this time by means of arsenic.

From the year 1860 onwards we can only refer very briefly to a few of the many original articles dealing with forensic medicine which are to be found in the pages of the Journal. This must not be regarded as in any respect an admission that such articles are of less value than those which preceded them, and that there was any falling off in the close association which the Journal had always maintained with this branch of medical science. On the contrary, the papers are as abundant and maintain as high a standard of excellence as heretofore. Our excuse for brevity is the inexorable editorial law as to the limits of space, and also the fact that, as we approach times within the memory of most of those still living, there is less necessity for detailed reference.

Without very strict attention to chronological order, therefore, we shall now proceed to review this final period in the Journal's history. In the first place, we recall a series of articles upon a subject which had not previously received very much notice from the pens of contributors, but which evidently began to attract great attention amongst medical men. I refer to the medico-legal relations of insanity. The first of these articles is by Skae, physician to the Royal Edinburgh Asylum, and is entitled "The Legal Relations of Insanity." This was followed by Douglas Maclagan on "Civil Incapacity," and Arthur Mitchell upon "Some of the Medico-Legal Relations of Insanity to Will-Making"; while at a considerably later date a barrister, Mr. Dodd, deals with "The Legal and Medical Theories of Mental Disease in Criminal Cases." The names of these authors are a sufficient guarantee that their contributions formed an important addition to the medico-legal aspects of insanity, and although, since the days when the articles were written, the law has been altered in some respects, the interest which attaches to them is in no way diminished.

By H. D. Littlejohn we find two further contributions which deserve notice—one a series of articles upon "The Practice of Medical Jurisprudence," and the other "A Case of Criminal Poisoning with Oxalic Acid in which Perforation of the Stomach took place." The last concerns a mother who was accused of poisoning her two weeks old infant, and although the evidence was conclusive that it died from the effects of a large dose of the poison administered by the mother, the jury took a lenient view, and found her guilty of "culpable homicide." This is one of the very few recorded cases of perforation of the stomach through the action of oxalic acid.

In 1864, Arthur Gamgee, at that time assistant in Edinburgh to the Professor of Medical Jurisprudence, writes upon "An Alleged Fallacy in Marsh's Process for the Detection of Arsenic," the fallacy involved being the interference with the production of a metallic mirror owing to the presence of nitric acid. Gamgee proved that a minute trace of nitric acid did not interfere with the test, although it might do so if present in considerable quantity.

In 1870 there appears from the pen of Charles Kidd, to whom, more than to any other, credit is due for exposing the fallacious nature of the majority of charges which are brought against medical men of criminal assault during the administration of anæsthetics, a paper entitled "On Chloroform in its Medico-Legal Bearings." Kidd was one of the first to recognise and expose the dangerous erotic delusions to which females are subject after chloroform administration, and his paper is based upon a case in which a young surgeon was imprisoned and practically ruined on account of a charge of criminal assault preferred against him by a weak and emotional girl. As a matter of fact, there was only the flimsiest fabric of evidence to support the charge, and the girl's father, who had brought her to the doctor for the purpose of being examined, was sitting during the whole of the supposed performance in a room communicating directly with the consulting room by means of a glass door. It is almost incredible to learn that under such circumstances the police magistrate did not dismiss the case, or at any rate allow the accused out on bail, and also that a jury took two hours to deliberate before finding him "not guilty."

Francis Ogston, junior, in 1878, introduced a new test for chloral hydrate by means of ammonium sulphide, in a paper recording a case of poisoning with this drug, and the following year an article of great scientific value was published by Burman upon "The Rate of Cooling of the Human Body after Death." The author's careful and elaborate investigations upon this question are very generally quoted, and are recognised as a most able contribution to a subject about which very scanty and inadequate data exist.

R. W. Philip's paper on "Poisonous Products in Food-Stuffs" is also deserving of notice, recalling as it does the sensational Carlisle food-poisoning case, as well as on account of his experimental research by which it was concluded that ham was responsible for the disastrous effects. Those interested in the subjects of strangulation and hanging will find several interesting cases recorded by Templeman in 1893, together with some very suggestive observations upon the post-mortem appearances in those forms of violent death. The same author contributed other medico-legal articles which will well repay perusal. Finally, we would only refer the reader to an admirable statement of the "Law of Infanticide," by Glaister, in which he makes a strong plea for its revision and improvement.

We cannot, however, close this brief survey without some reference to the records of famous criminal trials to be found scattered over the pages of the Journal during the latter half of last century. To omit to notice them would be a grave injustice, not only because of the excellence of the reports, but also because they played no small part in advancing the study of forensic medicine, and in maintaining the prominent position which the Journal had always assumed in relation to this branch of medicine. After the trial of Palmer, to which reference has already been made, we find an account of the Eaglesham poisoning case, with which the name of Douglas Maclagan was intimately associated. The trial arose out of, and very speedily followed, that of Madeleine Smith, and it was the first in Scotland where prussic acid had been employed as a poisonous agent. Unfortunately there was a remarkable discrepancy in the evidence of the medical witnesses for the prosecution, a circumstance which ultimately formed the prisoner's chief ground of defence. Several interesting questions arose out of the different results obtained in the chemical analyses by these gentlemen, of which one may be mentioned, namely, whether there was evidence of the undoubted spontaneous production of prussic acid during the decomposition of healthy animal textures.

In the same volume will be found a report of "The Trial of William Reid for Abortion and Murder," by Hugh Cowan, and we would here like to enter a word of praise for the numerous reports furnished by this gentleman to the Journal about this time upon trials of medico-legal interest. In the case mentioned above there were great divergencies of medical opinion as to the significance of the post-mortem appearances and the cause of the abortion. For the Crown, the three medical men, Drs. George Hamilton, Scott Myrtle, and Forrest, held that there were unmistakable wounds in the uterus caused by some instrument: while for the defence Matthews Duncan and H. D. Littlejohn were of opinion that the so-called wounds were merely the patent ends of the uterine sinuses, while they also put forward, as a probable cause of the abortion, a ruptured ovary which had been found at the post-mortem examination. The case aroused a great deal of interest in medical circles at the time, and gave rise to an article by Matthews Duncan criticising the evidence, and also to a paper read before the Medico-Chirurgical Society by Myrtle. The latter, which is reported in the Journal, led to a somewhat heated discussion, in which, besides the principals in the case, Andrew Wood, John Struthers, Sanders, Professor Miller, and others took part.

The trial of Thomas Smethurst for poisoning Isabella Bankes by means of arsenic is recorded at considerable length. It will be remembered that it was in connection with this celebrated case that severe criticisms were passed by the public press upon the scientific evidence, on account of Taylor discovering that the copper gauze used by him in Reinsch's process was itself contaminated with arsenic. Although the prisoner was found guilty by the jury and condemned to death, he was afterwards respited owing to the doubt thrown upon the evidence from this cause.

No less instructive are the accounts of those *causes célèbres* of a later date—Dr. Pritchard for the murder of his wife, and the trial of the notorious Chantrelle.

Another trial, reported by Cowan, has an almost universal fame amongst medical jurists, on account of its great rarity. It referred to a charge of rape during sleep, the possibility of which has for long been a vexed question and is generally discountenanced. The particular circumstances which favoured the commission of the crime in this instance were that the victim was a married woman, and that owing to great fatigue and want of sleep for some time previous, she had fallen into a more profound sleep than was natural. The crime was found by the jury to have been completed, and the prisoner received a sentence of ten years' penal servitude.

The action for seduction brought by a woman named Bromwich against the highly respected Dr. Waters of Chester, which created a great stir at the time, and is chiefly of interest on account of the fact that four medical men were found in the British Isles to support the plaintiff's ridiculous story, gave rise to a notable meeting of the Edinburgh Medico - Chirurgical Society. The account of this meeting is fully reported, and forms most entertaining and instructive reading. Professor J. Y. Simpson and Dr. Keiller, who, greatly to their credit, had both appeared at Chester assizes on behalf of their professional brother, a distinguished Edinburgh graduate, were present at the meeting of the Society, as well as Dr. Ramsbotham of London, who had been one of the four medical men employed by the plaintiff. Professor Simpson, who opened the discussion, showed how slender was the evidence, if indeed evidence it could be called, upon which the charge of seduction rested, and dealt in no measured terms with the medical evidence for the prosecution. It is a curious circumstance to find the great medical jurist Taylor conjoined in a case with a man of such unenviable notoriety as Gully of Malvern, about whose evidence Professor Simpson says: "Perhaps in the annals of medicine and medical jurisprudence it is unequalled in its character. It is an extraordinary compound of ludicrous professional pretension and equally ludicrous professional ignorance."

Our allotted space has now been filled, and while conscious that we have failed to do adequate justice to the subject and to many names associated with its progress during the century, we trust that at least enough has been said to justify the opinion previously expressed, that the Journal has played no small part in the advancement of medical jurisprudence.

PUBLIC HEALTH.

By J. BUCHANAN YOUNG, M.B., D.Sc. (Public Health).

WITHIN the limits of this short review of the progress of preventive medicine during the last hundred years, it will be impossible to do more than glance at the more important advances which have been made in this department of medicine in its administrative and scientific aspects.

The opening years of the nineteenth century were comparatively unproductive of new introductions and initiative movements in preventive medicine. There was nothing, for example, to compare with the impetus given to sanitary progress in the eighteenth century by the writings of Mead on pestilential contagion, in which he laid down rules in relation to the prevention of its spread, which, in the light of our present-day knowledge, are little short of marvellous. He suggested the formation of a Central Council of Health and measures for isolation and disinfection, and for the removal or abatement of nuisances. Nor did there appear writings such as those of Sir John Pringle in relation to "Diseases of the Army," of Lind of Haslar Hospital in relation to the "Diseases of Seamen," or of Sir Gilbert Blane, who in 1796 became Chief of the Navy Medical Board. The name of Blane forms one of the connecting links between the two centuries, and his work drew the attention of others to similar matters. His papers on "The Comparative Health of the British Navy" and on "The Comparative Prevalence of Different Diseases in London," as well as his writings on the value of vaccination, were of equal value in educating the profession as to the value of preventive measures, and acted as incentives to further progress. Another connecting link with the eighteenth century is the name of Edward Jenner, who in 1798 published his "Inquiry into the Causes and Effects of Variola Vaccinae," and gave to the world his great preventive measure of vaccination against smallpox. It was therefore with the diffusion of thoughts and methods originated during the preceding century, and especially in the later years of that century, that the early years of the nineteenth century were occupied, so far as preventive medicine is concerned. The fight for the establishment of vaccination as a recognised operation was going on, and many were the arguments which were used for and against it. In the early numbers of the *Edinburgh Medical and Surgical Journal* there appeared several important papers on "Vaccination and Variola," as well as critical analyses on works published on these subjects. In their report for the year 1810,[1] the surgeons of the Vaccine Institution of Edinburgh state that "in no instance have they seen any bad effects which could be attributed to vaccination," and that "the experience of another year serves to confirm them in their former opinion that the practice of vaccination is deserving of the highest degree of confidence from the public." They state that they had during the year "inoculated with smallpox a great many children who had been vaccinated eight, nine, and ten years ago—all of whom have been found to resist infection. In this connection there was published by John Hennen, Deputy-Inspector of Military Hospitals in North Britain, in the Journal for October 1818, an important paper in the form of a letter to Dr. Duncan, junior, giving "an account of the eruptive diseases" which had at that time appeared in the Edinburgh military hospitals, "both naturally and after inoculation as they affected children and adults, some of whom had previously had smallpox, some who had been previously subjected to the cowpox," and others who never "had either of these diseases." His desire in giving the history of these cases was "in order to collect the sentiments of unbiassed professional men on a point of such vital importance to society as the distinctive marks between the smallpox and aggravated cases of chicken-pox, etc., so often confounded with it; a distinction which may seriously involve the value of the most important of modern medical discoveries, the Jennerian plan of counteracting the ravages of variola." From the evidence of the cases described, as well as from the extensive experience of others in many parts of the globe, he was of opinion "that by a universal adoption of, and steady perseverance in, the practice of vaccination, the ravages of smallpox may be effectually diminished, and even the disease itself perhaps exterminated, and that this extermination, the great ultimate object of the Jennerian plan, affects more nearly than has generally been imagined even those who have already undergone the horrors of smallpox, or who have been subjected to its mild but powerful preventive." During those years there was also evidence on the part of the larger towns of an awakening to the necessity for better sanitary arrangements. This was shown by their approaching Parliament for Acts for the regulation of cleansing, lighting, paving, etc. There was also the recognition of the necessity for making special provision for the treatment of infectious diseases. In this Journal for October 1818, in a critical analysis dealing with epidemic fever (typhus), we find the following:—"The patients may be removed either to a general hospital or to a fever hospital. There can be little doubt of the preference of the latter, but they can only be supported in capitals and large cities, and, except during epidemics. are not absolutely necessary. In these times, any large building, even a barn, may be temporarily fitted up as a fever hospital; sufficient space and ventilation being what is chiefly requisite."

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[1] *Edinburgh Medical and Surgical Journal* for the year 1811, p. 254.

The cholera epidemic of 1831–33 awakened the country to the recognition of many insanitary conditions existing in our large towns and cities, and there was passed in 1835 the Municipal Corporations Act, giving certain towns powers to deal with nuisances. As showing to what extent the subject of cholera and its prevention occupied the attention of the medical profession and the public generally at this time, the Journal in February 1832 published a special supplement of 292 pages, "containing official reports, and analyses of other recent publications on malignant cholera." To this supplement Christison contributed an article giving a selection from the Russian Official Reports on the "Epidemic Cholera of Orenburg of 1829–30," and also a most instructive and interesting "Account of the Arrangements made by the Edinburgh Board of Health, preparatory to the arrival of Cholera in that City." This account was written owing to the repeated applications which had been made from various quarters of Scotland for information and advice as to the measures taken against cholera in Edinburgh, and in the hope that it would be "of some public utility to disseminate, through the medium of the Journal, a narrative of the whole preparations, detailed in so practical a manner as to serve as a guide for other towns in their proceedings." From the paper it is evident that the arrangements made for combating the disease were on an elaborate scale and very complete. In his conclusions, Christison strongly urged the establishment of reception houses, to which those who had been exposed to infection might be removed, and where they "may be for a certain period guarded against exposure to the exciting causes of the disease."

The subject of vital statistics was brought prominently into view by the need experienced during this cholera epidemic of correct mortality statistics, and in 1839 the Registration Act for England was passed—the similar Act for Scotland not being passed until 1855, and that for Ireland not till 1864. In an article in this Journal in 1841, the first two annual reports of the Registrar-General in England were submitted to detailed criticism, and anomalies in Farr's classification of the causes of death were pointed out. The writer of the article, while recognising the great value of these reports, pointed out "the erroneous results proceeding from the practice of designating diseases at one time by symptoms and at another by their pathological characters. The same disease may in this manner be divided into three or four different affections, to the great confusion of the report, the perplexity of the reader, and the annihilation of all accuracy and precision." The need for a compulsory Registration Act for Scotland was much felt, and this is shown by several papers which appeared in this Journal by James Stark, Registrar of the Mortality of Edinburgh and Leith. In a paper published in January 1847, he gave the rate of mortality of Edinburgh from 1780, as derived by him personally from the records of burials in the city and suburbs, as also the difference in the rate of mortality among different classes, and in the married and single. He also, from his statistics, compared the eligibility of Edinburgh as a place of residence with other places, and pointed out its suitability for the education of children. He says, "While London, the healthiest of English large towns, loses annually one out of every twenty-six children under 15 years of age, Edinburgh is so much more healthy that it loses only one out of every thirty annually." In April 1849, Stark also contributed an article on the mortality of Edinburgh and Leith as compared with that of the chief towns of Scotland. "Being anxious to supply, as far as possible, the want of a Registration Act for Scotland . . . some trouble was taken to procure as correct returns as possible." Glasgow, Paisley, Dundee, and Greenock at that time regularly prepared bills of mortality. Aberdeen, Perth, and Kilmarnock had no bills of mortality, but he was able to get a general idea of their mortality from the burial registers. In several towns "no record whatever is kept of the persons buried within their bounds." It was work such as this of Stark's which showed the necessity for the Registration (Scotland) Act passed in 1855. There can be no doubt that the annual reports published by the Registrar-General for England, together with the reports made by Arnott and Kay on "The Physical Causes of Fever in London," by Southwood Smith on "The Physical Causes of Sickness and Mortality among the Poor of several of the Districts in London," and on "The Prevalence of Fever in Twenty Metropolitan Unions and Parishes in 1838," produced a considerable effect on the minds both of the profession and the public, and resulted in the appointment of the Select Committee on the Health of the Inhabitants of Large Towns, which recommended that Acts should be passed for the regulation of buildings, the construction of sewers, and for the appointment of local boards of health, and inspectors. The report also pointed out the necessity for the control of water supplies, burial grounds, lodging-houses, and the provision of open spaces. It was, however, probably to the appearance of Chadwick's "Report on the Sanitary Condition of the Labouring Population of Great Britain" in 1842, together with that "On the Practice of Interments in Towns," that the greater proportion of the sanitary enactments of the years immediately following were due, and which led to the passing of the first Public Health Act in 1848. In his general report Mr. Chadwick insisted on the necessity for appointing medical officers independent of private practice, and with special qualifications. Liverpool was the first place to make such an appointment, in 1847, and the following year Sir John Simon was made medical officer of health for the City of London.

By the end of 1848 a General Board of Health was constituted for five years, and of this Board Chadwick was a member, and powers were granted to form Local Boards of Health upon petition from not less than one-tenth of the inhabitants of a locality, or on the initiative of the Central Board, where the average death-rate for a period of seven years had exceeded 23 per 1000. Provision was also made for dealing with any formidable prevalence of epidemic disease. Curiously enough, the General Board had no medical member, and it was not until 1853 that this defect was remedied by the appointment of Sir John Simon as medical officer of the Board of Health.

The subject of military hygiene was brought prominently into view by the terrible experiences of our troops during the first winter of the Crimean War, when, as Sir Douglas Galton said, "the number of men who were disabled by preventable diseases amounted to more than one-third of the whole army which went out of England." The report of the Crimean Commission led to the appointment of a Royal Commission on the Regulations affecting the Sanitary Condition of the Army. Its report was issued in 1859, and was followed by another in 1861, chiefly on military barracks and hospitals. These two reports, together with the publication of Miss Nightingale's "Notes on Hospitals," were productive of important practical reforms: and there was later established the Army Medical School at Netley for the purpose, as recommended by the Commission, of giving to young medical officers entering the army particular training in the "specialities of military medicine, surgery, hygiene, and sanitary science."

As evidence of the attention which was now being paid to controlling the spread of infectious disease, it may be noted that in the Journal for May 1858 there was published an account of what is regarded as the first recognised instance of milk-borne infection. Michael Taylor there describes cases of enteric fever occurring at Penrith in October and November 1857, in seven different houses all supplied with milk from the same dairy.

By the Local Government Act of 1858 there was formed the Medical Department of the Local Government Board under the control of the Privy Council, and an annual report from the medical officer was required for presentation to Parliament. The work of this department at first was very largely in connection with vaccination, especially with its supervision and the regulation of the supply of reliable lymph. Although by the Vaccination Act of 1853 vaccination was made compulsory, there was much need for improvement in facilities for public vaccination. The Act of 1867 authorised the appointment of vaccination officers, and that of 1871 made their appointment compulsory in all unions. Inquiries were also made by the Board as to the prevalence of diphtheria, famine diseases, and cerebro-spinal meningitis, and valuable reports were prepared on hospitals, dangerous industries, the housing of the labouring classes, etc. In 1865 the first permanent inspector was appointed to the Board, and since 1870 auxiliary scientific investigations have been carried out and many valuable reports on experimental subjects bearing on public health have been published as appendices to the annual reports of the medical officer.

In 1869 the Royal Sanitary Commission was appointed, and as a result of its labours there was passed the Public Health Act of 1872, which constituted urban, rural, and port sanitary authorities, and placed these under the obligation of appointing a medical officer or medical officers of health. This Act was followed by a consolidating Act in 1875. Many other sanitary Acts followed owing to the suggestions of this Commission, notably the Rivers Pollution Act (1876), the Sale of Food and Drugs Act (1875), the Alkali Acts, etc. Coming down to more recent years, the Infectious Diseases Notification Act, making the ordinary infectious diseases compulsorily notifiable, was passed in 1889. It was compulsory for London, but adoptive for the rest of the country. In 1899, however, its provisions were made compulsory for all England and Wales, and by the Public Health (Scotland) Act of 1897 its provisions are compulsory in Scotland. This system of compulsory notification has proved of great advantage in checking the spread of infectious disease. In this connection it is of interest that in 1879, by powers obtained in the Edinburgh Municipal and Police Act of that year, the Corporation of Edinburgh made the notification of infectious diseases compulsory. On 1st March 1876, Sir Henry Littlejohn, Medical Officer of Health for the City, read a paper before the Medico-Chirurgical Society on "The Compulsory Intimation of Infectious Disease." This paper was published in the Journal for May of that year. In this paper he strongly urged the necessity for compulsory notification, and explained the proposed scheme, which was subsequently adopted and put into operation. In urging the claims of the scheme, he said: "If the condition of our cattle when affected with contagious disease is so narrowly watched, and penalties attached to delay in giving timeous notice of illness, surely it is not too much to expect that ready information of the occurrence of such disease among ourselves should be demanded and that under as stringent penalties."

The year 1894 saw the passing of the Local Government Board (Scotland) Act, and the establishment of the Scottish Local Government Board with a medical member in its constitution, and in 1897 the Public Health (Scotland) Act, repealing the Act of 1867 and amending Acts, was passed, considerably simplifying procedure in public health, and giving greatly increased powers to sanitary authorities in Scotland. The Vaccination Act of 1898, following on the report of the Royal Commission on Vaccination, made vaccination "domiciliary" in England, and the use of glycerinated or other calf lymph, as supplied by the Local Government Board, was made the standard lymph. The Factory and Workshops Act of 1901 consolidated all previous factory enactments, and made a much needed extension in the definition of the term "workshops," so as to include any workplace in which "with the permission of, or under agreement with, the owner or occupier, two or more persons carry on any work which would constitute the place a workshop if the persons working therein were in the employment of the owner or occupier." It further gave power to the Secretary of State to prescribe a standard of sufficient ventilation for any class of factory or workshop.

In 1901 the Committee on Food Preservatives issued its report and made several recommendations as regards the use of colouring matters and preservatives, which it would be well to have made compulsory by law.

A Royal Commission on Sewage Disposal was appointed in 1898. In its interim report of 1901 the opinion was expressed that a special department of the Local Government Board should be created to look after the general protection of rivers from pollution by sewage and manufacturing effluents. Its final report will be awaited with much interest, as the question of sewage disposal is probably the most difficult which the modern sanitarian has to face.

Such has been, in outline, the course of preventive medicine and sanitary administration during the nineteenth century, and in it we see the evolution of order out of comparative chaos, when, as stated by Simon, there was such a state of matters in 1868 that in parishes "the privies were under one authority and the pigsties under another."

In its more purely scientific side, preventive medicine has benefited largely by the development and application of bacteriology. Following on the discovery by Pasteur in 1857 that lactic fermentation was due to the growth of a particular organism, and on his work on the diseases of wine and of silk-worms, the germ theory of disease became prominent and the number of investigations numerous. Although in 1865 Villemin had proved tuberculosis an inoculable disease, it was not until 1882 that Koch demonstrated the specific organism as the cause of the disease. In 1875, Klebs found the characteristic organism which is now known to be the cause of diphtheria in the false membrane from the throat. In some cases it was absent, and in these staphylococci or streptococci were present, and he described diphtheria as occurring in two forms. Later, Löffler showed that in cases of true diphtheria the typical bacillus was almost invariably present. This discovery of the bacillus has been followed by the introduction of the antitoxin treatment of the disease, which, coupled with bacteriological diagnosis, has done much to reduce the former high case mortality, and by early diagnosis of ill-defined cases to limit its spread. The bacillus of enteric fever was discovered by Eberth in 1880, and in recent years the agglutination test, first described by Widal, has proved of much assistance in the diagnosis of the disease, although the test is not entirely free from fallacy. In 1883, Koch, while engaged on the German Cholera Commission in Egypt, discovered his "comma" bacillus in the evacuations of patients suffering from cholera. In 1885, Pasteur described to the French Academy his method of inoculation against rabies. The bacillus of bubonic plague was isolated in 1894 by Kitasato and Yersin, and in 1897 Haffkine introduced his prophylactic serum, inoculation with which seems to diminish the incidence of the disease and also its case mortality among the inoculated. Unfortunately, its protective influence is of comparatively short duration. Such was shortly the conclusion at which the Indian Plague Commission arrived in regard to it.

The value of bacteriology as an aid to administrative public health is becoming more and more recognised, and this is shown by the number of sanitary authorities which now provide facilities for the bacteriological examination of products in cases of suspected infectious disease.

DISEASES OF CHILDREN.

By G. H. Melville Dunlop, M.D., F.R.C.P.Ed.

The subject of "Diseases of Children" is a plant of yesterday's growth regarded from the centenarian standpoint of the Journal, and it is doubtful if it is even entitled to celebrate the jubilee of its existence as a recognised special department of medicine. During the first fifty years of last century the subject was considered of little importance; the child was looked upon as a little man, and the practitioner's knowledge of pediatrics was supposed to be arrived at by deduction from his acquaintance with the general principles and practice of medicine. In this country there were no hospitals set apart for the reception and treatment of sick children, there was no provision for the teaching or examination of the student on the subject, text-books were few and far between, and such recent developments as the establishment of pediatric journals and societies were absolutely unknown.

The earliest record of any institution for the treatment of sick children is that of a dispensary established in London in 1769 by Dr. Armstrong. Only out-patients were treated in this dispensary, and after an existence of a few years it lapsed on the death of the founder. The first children's hospital in Europe designed for the reception of in-patients was the Hôpital des enfants malades, erected at Paris in 1802, which, after an existence of more than a hundred years, still carries on its humanitarian work. It had previously been conducted as an orphan hospital under the name of Maison de l'enfant Jesus, but, on the suggestion of Tenon, it was changed into a children's hospital. The Nicolas Hospital at St. Petersburg was founded in 1834, the St. Anne's Child's Hospital at Vienna in 1837, and the Poor Children's Hospital at Buda-Pesth in 1839. It was not until 1852 that the first children's hospital in Britain was erected at Great Ormond Street, London, largely owing to the instrumentality of the late Dr. Charles West. The work of establishing this hospital was to him a labour of love, for, as he himself says, "It was the dream of my youth and the occupation of thirty years of my manhood, and I trust that when old age comes I may be allowed to linger about the place to which my heart turns as a parent's towards his child." The hospital started with ten beds in two old houses in Great Ormond Street, and during the first year of its existence 143 children were treated in its wards, and 1250 as out-patients.

It now contains three medical and three surgical wards, and gives accommodation to 200 patients, and last year 2403 patients were treated in the wards.

In 1900 the hospital fell on evil times, and there was even some talk of the institution being forced to close its doors. That this disaster was averted was largely owing to the advocacy of Mr. Punch, who is always ready to espouse the cause of the destitute, and who, by opening a subscription list in his pages, was able in a few months to present the directors with a cheque for over £16,000.

Altogether 850,000 children have passed through the doors of this noble institution since its foundation in 1852.

Seven years later, a movement was set on foot for the establishment of a similar institution in Edinburgh. The practical inception of the hospital first took root in the fertile brain and warm heart of Dr. John Smith, who has so closely identified himself both by voice and pen with the medical history and traditions of our grey old northern metropolis. In an impressive letter to the *Scotsman*, dated 24th February 1859, under the signature of "Sigma, M.D.," he entered a strong plea on behalf of suffering infants for the foundation of a children's hospital in Edinburgh. A few days later, the *Scotsman*, in a leading article, made an eloquent appeal to the public to carry out Dr. Smith's recommendation, and the following week a letter appeared from Mr. George Barclay, now the only survivor of the original board of twenty-four directors, welcoming the suggestion and enclosing the first subscription of £100 towards the furtherance of the scheme. A public meeting was held in the Freemasons' Hall on the 5th May 1859, under the chairmanship of the Rev. Dr. Hodson, rector of the Edinburgh Academy, when it was proposed to inaugurate a hospital in Edinburgh and to make a public appeal for funds.

The citizens responded to this appeal in so generous a manner, that the directors had the satisfaction of opening the doors of a small hospital in Lauriston Lane for the reception of patients on the 15th of February 1860, and at the end of the first year 172 patients had been treated in the wards and 1275 as out-patients. An advisory committee consisting of four medical men was appointed to co-operate with the directors in the management of the hospital, and of these four the following three are happily still amongst us:—Dr. John Smith, the founder and lifelong friend of the hospital; Dr. Alexander Peddie, the venerable Nestor of the profession in Edinburgh, who is universally regarded with feelings of affection and esteem, and whose centenary we are looking forward to celebrate in a few years; and Sir Henry Littlejohn, our indefatigable Professor of Medical Jurisprudence, who carries his years so jauntily, and who is still one of our directors. The only member of this distinguished quartette who has fallen by the way is the late Dr. Charles Wilson, and he has left numerous verses and other papers showing the warm and active interest he took in the hospital and its beneficent purposes.

The small building in Lauriston Lane soon proving insufficient for the growing needs of the hospital, Meadowside House, an old Edinburgh mansion, was purchased by the directors and formally opened in May 1864.

At first it contained only forty beds, but in 1870 a new wing was added, which enabled the hospital to accommodate seventy-two patients. Cases of infectious disease were for many years treated in the wards of the hospital, but this was discontinued in 1885, when it became incumbent on the local authority to provide accommodation for such cases. A surgical department was inaugurated in 1887, and Dr. Joseph Bell was chosen as the first surgeon of the hospital.

Queen Victoria granted her patronage to the institution in 1863, and our present King and Queen visited the hospital in 1870, and their example has been followed by many distinguished visitors, not the least notable amongst whom was the late Charles Dickens. His touching appeal in aid of the funds of the hospital, issued and circulated in the form of a pamphlet, relates how on one occasion, on visiting a wretched slum dwelling in Edinburgh, he discovered a feeble, wasted, sick child lying in an old and borrowed egg-box. "There he lay with his little wasted body, quite quiet, quite patient, never saying a word, with his bright attentive eyes, seeming to wonder 'what it was a' aboot.' God knows, I thought as I stood looking at him, he had his reasons for wondering—reasons for wondering how he came to be left there, a little, decrepit old man, pining to death, as if there were no crowds of healthy, happy children playing on the grass under the summer sun within a stone's throw of him. Ever since that time I have seen my poor little drooping friend in his egg-box wondering what it meant, and why in the name of a gracious God such things should be."

Owing to an unfortunate epidemic of typhoid fever amongst the patients and nurses in 1890, the directors had suddenly to face the problem, which they had for some time been considering, of finding a site for a new hospital. For several years previously Meadowside House had proved itself too small to satisfy the growing demands made upon its accommodation, and the Royal Infirmary had been casting envious eyes upon the ground occupied by the Children's Hospital, as affording a delectable site for the extension of its own buildings. The directors were fortunate in securing an eminently desirable site on the opposite side of the Meadows, previously occupied by the Trades Maiden Hospital. On this site the present handsome hospital with its large airy and cheerful wards was erected, and was formally opened by Princess Beatrice on the 31st October

1895. It contains five wards, three medical and two surgical, and gives accommodation to 120 patients. Last year 1598 children were treated in the wards, and 26,775 attendances were recorded in the out-patient department. Since the hospital was opened, a large new surgical theatre, replete with all the most modern appliances, has been added, and last year a handsome new out-patient annexe was opened by Princess Louise, which will bear favourable comparison with any similar department in the United Kingdom.

Amongst the early members of the medical staff we record with pride the names of Drs. Newbigging, Graham Weir, Matthews Duncan, John Moir, Warburton Begbie, Angus Macdonald, George Balfour, and many others, who did so much to add to the renown, and to cast a halo round the reputation, of the Edinburgh Medical School in the nineteenth century. At present a collection of the portraits of the past members of the staff is being made, and, when completed, there will be a historic portrait gallery hanging on the walls of the hospital, forming an interesting link between the past and present.

No record of the hospital would be complete which did not pay a passing tribute to the memory of the late Mr. Henry, who for so many years acted as the honorary secretary. He was connected with the hospital from its commencement, and took a lifelong interest in its progress and welfare. He is worthily succeeded in his disinterested and unselfish labours by his son.

At the present day there are in London alone fifteen children's hospitals, and in every town of any considerable size in Great Britain and on the Continent of Europe there are hospitals set apart specially for the reception and treatment of sick children.

Literature.—One of the earliest works on diseases of children published in this country was a treatise by Harris in 1689, originally written in Latin under the title "De morbis acutus infantum," but since translated into English. Sydenham in a letter to the author says, "It is my belief that your little book will be more useful to mankind than all I have ever written." A book which had a large circulation was the English translation of Rosen von Rosenstein's "Diseases of Children and their Remedies," published in 1776, in which the following quaint lines regarding the choice of a wet-nurse appear:—

"Choose one of middle age, nor old nor young,
Nor plump nor slim her make, but firm and strong,
Upon her cheek let health refulgent glow
In vivid colours that good humour show;
Long be her arms and broad her ample chest,
Her neck be finely turned and full her breast;
Let the twin hills be white as mountain snow,
Their swelling veins with circling juices flow,
Each in a well-projecting nipple end,
And milk in copious streams from them descend."

In the early part of last century the books on children's diseases which enjoyed the largest circulation were the works of Underwood, originally published in 1784, and that of Maunsell and Evanson, published in Dublin in 1836. This was followed in 1846 by Charles West's "Lectures on Diseases of Infancy and Childhood," which for many years thereafter was regarded as the standard work on the subject. Since that time there has been an ever-increasing stream of text-books on diseases of children published in Britain.

Amongst them may be mentioned the works of Churchill (1850), Hillier (1868), Ellis (1869), Money (1884), Goodhart (1885), Ashby and Wright (1889); and as emanating from our own school within the last ten years, the works of Carmichael, John Thomson, and Elder and Fowler.

Amongst the many excellent monographs which have appeared, Eustace Smith's "Wasting Diseases of Children" and Cheadle's masterly treatise on "The Rheumatic State in Childhood" are especially worthy of notice.

France has furnished us with Rilliet and Barthez' "Traité clinique et pratique des maladies des enfants," and Grancher and Comby's "Traité des maladies des enfants" in five volumes; while to Germany we are indebted for a text-book from Vogel in 1860, one from Henoch in 1861, and Gerhardt's "Handbuch der Kinderkrankheiten" in 1877–93. To no country is more credit due for the recent great progress in pediatrics, and for the sterling quality of the contributions which its authors have made to the literature of the subject, than to America. Especially are we under a debt of gratitude to Rotch, the pioneer of percentage feeding, who by his investigations and his research work on this subject has raised the feeding of infants from the somewhat empirical position it previously occupied to the more satisfactory platform it now occupies.

In 1825, Dewees published a treatise on the "Physical and Medical Treatment of Children," and since this date the American books on the subject have been almost too rapidly increasing. Lewis Smith's text-book went through several editions, as did also the veteran Jacobi's book on "The Therapeutics of Infancy and Childhood." More recently the standard work of Holt, the *Encyclopædia* edited by Keating, the work of Koplik, and the writings of Joseph O'Dwyer on intubation, are specially deserving of mention.

Teaching.—One of the deficiencies in the curriculum of the medical schools of last century was the insignificant attention paid to the subject of diseases of children.

Dr. Crozier Griffith, in a recent article, says that the earliest instance of any teaching on the subject was the establishment in Stockholm by Roberg and Rosenstein of a class of clinical instruction of diseases of children in 1752.

There is no record of any further attempt at teaching the subject on the Continent of Europe till about 1850, when Bouchut commenced giving lectures on the medical diseases of children in Paris, and at about the same time Mauthener taught pediatrics in Vienna and Hauner in Munich. In Edinburgh, so far as we have been able to ascertain, the first attempt at delivering a full course of lectures on the diseases of children was made by Dr. William Campbell in or about 1840.

Before this date, and for long afterwards, the subject was supposed to be sufficiently exhausted by three lectures included in the course of midwifery and delivered by the professor of that subject. What title or what special knowledge or training a lecturer on midwifery and gynæcology was supposed to have of the diseases of children, it is difficult to understand. After the establishment of the Children's Hospital in Edinburgh, cliniques were given once a week on the subject.

In 1885 the University instituted a lectureship on diseases of children, and appointed the two senior members of the staff of the Children's Hospital lecturers on the subject, but as it was not a compulsory course the lectures were attended by only a limited number of students.

Under the new University Ordinances, the student is required to attend for purposes of graduation either a course of diseases of children, diseases of the ear and throat, or diseases of the skin. Last year 193 men and women students attended the clinical course of instruction at the Children's Hospital. The course is made as practical as possible, and consists of one clinical lecture and three ward cliniques weekly, demonstrations in the post-mortem room, and attendance at the out-patient department, and the student has every opportunity of studying cases clinically, and of becoming acquainted with the methods of examining children and of the diseases more peculiar to them.

The Royal College of Physicians of Edinburgh includes diseases of children as one of the subjects specially professed in its examination for its Fellowship, and diseases of children are also from time to time included in the postgraduate course in Edinburgh.

In many of the larger medical universities of Europe there are now fully established chairs of Diseases of Children, the occupants of which are styled Professor.

In America, Dr. Jacobi commenced teaching the subject in the Medical College of New York in 1860. Since that time America has advanced rapidly. In sixty-four colleges there is a special chair on the subject, and in forty-nine of these colleges the occupant of the chair has the title of Professor.

Pediatric Journals.—The publication of pediatric journals began at a comparatively early period on the Continent, and Germany has the credit of issuing the first journal devoting itself entirely to diseases of children, and published in 1793 under the title of *Sammlung interessanten Abhandlungen über etliche wichtige Kinderkrankheiten.*

In France there appeared in 1811, under the auspices of the physicians and surgeons of the Children's Hospital, a journal entitled *La Clinique des Hôpitaux des Enfants.* There was next published in Germany in 1834 the journal *Analekten über Kinderkrankheiten*, which is no longer in existence. Next in order in 1843 we find the *Journal für Kinderkrankheiten* making its appearance under the editorship of Behrend and Hildebrandt; this was followed in 1857 by the well-known *Jahrbuch für Kinderheilkunde*, and since that time the four following journals have been started in Germany and are still in existence: *Archiv für Kinderheilkunde*, the *Kinderarzt*, the *Monatschrift für Kinderheilkunde*, and the *Centralblatt für Kinderheilkunde.* At least five journals are published in France, the oldest being the *Revue mensuelle des maladies de l'enfance*, dating from 1883. Italy has two journals, *La Pediatria* and another: Spain has the same number, but they treat of gynæcology as well as children—*Anales de Obstetricia, Ginepatia y Pediatria*, and the *Archivos de Ginecologia y Pediatria;* Russia publishes one, *Dietskaya Meditsina.* In the United States the *Archives of Pediatrics* was started in 1884, and this was followed by the publication of *Pediatrics* in 1895. It was not until last year that a journal appeared in this country, under the title *British Journal of Diseases of Children.*

Societies.—It is only within comparatively recent years that pediatric societies have originated. Twenty-five years ago the British Medical Association established a section of diseases of children at its annual meeting, and the example so set was quickly followed by the American Medical Association. The Gesellschaft für Kinderheilkunde was commenced in Germany in 1883; a similar society was started in St. Petersburg in 1885, and one in Moscow in 1892, while recently a society for the study of diseases of children was started in Paris. The American Pediatric Society was inaugurated in 1889, the Philadelphian Society in 1896, and the British Society for the Study of Disease in Children in 1900.

In the pages of the Journal, within the last hundred years a large number of important papers, well worthy of perusal, have appeared in relation to diseases of children, but unfortunately the space at our disposal precludes us from reviewing them in this paper. In 1897 the Journal opened a section on diseases of children in the pages devoted to a consideration of the recent advances in medical science, and since that date a quarterly abstract has regularly appeared.

DISEASES OF THE EYE.

By G. A. Berry, M.B., F.R.C.S.Ed.

Interest in disease of the eye seems, almost from time immemorial, to have been mainly confined to the few who have exclusively devoted themselves to practising as oculists. Amongst the Egyptians, the Greeks, and the Romans, the oculist was a recognised medical specialist. In the Middle Ages and up to the eighteenth century he was an itinerant quack. It was not until the earlier part of the eighteenth century that eye diseases came to be recognised as worthy of the attention of the educated physician, and not until towards its end that the trained medical practitioner again specialised as an oculist.

This recognition of the claims of ophthalmology was first made by the civil hospital at Vienna, which instituted a department for eye diseases. This was shortly followed by the appointment of a professor of ophthalmology at the University of Vienna. Here it was that Beer afterwards attracted students from all parts of Europe at the very beginning of last century.

Influenced by the example of Vienna, a great stimulus to the practice and teaching of ophthalmology in this country was given by the starting in 1804 of the London Ophthalmic Hospital. That institution was founded by Saunders and Farre. Their work was carried on by Lawrence, Tyrrell, and others in succession down to the present time. Indeed, the London Ophthalmic Hospital must be looked upon as having exercised a paramount influence in forwarding the science and practice of ophthalmology in this country during the whole of last century. Many of the surgeons connected with it not only contributed articles to the various medical journals, but were the authors of more or less exhaustive treatises in which their extensive experience was recorded. The writing of treatises, in the absence of journals specially devoted to ophthalmology, which first made their appearance at a later date, was the method generally resorted to for the publication of the more important generalisations, both as to special pathology and special therapeutics. The ordinary medical journals contained for the most part only short accounts of the rarer forms of disease met with.

Important, however, as the London school had been and continued to be, it should not be forgotten that of the many excellent treatises on eye disease which appeared in the first half of last century, the one which is entitled to the first place was the work of Mackenzie, a Glasgow oculist. His book was not only the most important one on the subject in English, but may be said to have had no serious rival at the time, the great work of Beer alone perhaps excepted, in any other language.

In the first half of last century, although so much was done by British and foreign oculists in investigating the nature of pathological changes located in the eye, the prevailing treatment was of a kind which it is difficult to imagine as being in many respects other than harmful rather than beneficial. This was the case owing to the extent to which the more purely speculative notions as to etiology were indulged in, and the most persistent system of over-treatment pursued to combat the general states which were supposed to give rise to the various local conditions. And this almost barbarous over-treatment did not at once cease, even when, by the genius of v. Graefe and the labours of his many pupils, attention was diverted from the relatively obscure problems of etiology to the increasingly demonstrable facts of local pathology. As late as 1859, Dixon, in the preface to the second edition of his "Diseases of the Eye," wrote: "The abuse of bleeding and mercury and general over-drugging and depletion are not so wholly things of the past as to make it superfluous in a writer on ophthalmic medicine to warn his readers against their dangerous consequences both to sight and health." Ocular surgery, on the other hand, was less open to criticism, looked at in the light of the ideas of the present day, although great advances were still destined to make their appearance in connection with almost all operations on the eye.

The opening of the second half of last century inaugurated the era of what might be called the modern ophthalmology. In this great reformation, which carried the study of the eye in health and in disease to a point in which it was recognised as the most advanced in the whole range of medicine, our countrymen were not specially active—not at least as pioneers. Indeed, the placing of ophthalmology on a new foundation, as it were, was practically the work of one man—v. Graefe. Fortunate it was that at the time of its invention (1849) by Helmholtz there should happen to be a v. Graefe into whose hands to put the ophthalmoscope. v. Graefe was no narrow specialist, and at the same time not a man to assume too rashly the nature of etiological relations from the mere simultaneous existence of changes in parts of the body remote from the eye. His insight into medicine as a whole, and his extraordinary power of accurate observation, made the ophthalmoscope in his hands a means of revealing the nature of many diseases whose symptoms he had already carefully studied, much more rapidly and much more completely than would have been the case with any other single individual of less outstanding power. With all this, too, he was exceptionally situated in having command of a very large material.

Besides all the new ground which the newly invented instrument enabled him to tap, there was scarcely an ophthalmological topic which v. Graefe did not leave in a more advanced state than he found it. He introduced improvements in the operation for cataract, and greatly elucidated the various circumstances which should influence the operator in connection with the possible complications which might exist along with cataract. He revised, modified, improved, and put on a scientific basis, the operations for strabismus, which originated with Dieffenbach in 1839. He made most valuable additions to the knowledge of the different causes, diagnosis, and prognosis of amblyopia. He discovered the value of iridectomy for the cure of glaucoma, and greatly added to the existing knowledge of the clinical nature of that disease and the various indications for its treatment. In addition to these and many other minor advances, he was able to give wider publicity to his teaching than would probably have resulted from his clinical writings alone, owing to his coming into direct contact with most of the ophthalmic surgeons of his day, many of whom were pupils at his clinic in Berlin. To the student of to-day, indeed, a special value attaches to v. Graefe's writings, for the many great advances they recorded had reference to cases, impressions formed, and the results obtained and demonstrated to so many who were able to appreciate and criticise. Many of his pupils were able to amplify by pathological research the knowledge gained and recorded by him from scientific clinical investigation and insight.

The great advances made from the middle of last century practically all followed on the invention of the ophthalmoscope. They were by no means all, or even for the most part, directly the result of this invention. The interest, however, aroused by the new method of objective examination led to many other developments in both subjective and objective methods. The scientific aspect of ophthalmology was further greatly promoted by the genius and labours of Helmholtz, whose monumental work on physiological optics appeared in 1859-66.

Another pioneer was Donders. He and his pupils did much to systematise and add to the existing knowledge of the optical conditions of the eye. It thus became possible to recognise and correct defects of vision which formerly either remained untreated or were only dealt with on purely empirical lines. Donders' work was complete, so that from a practical point of view little remained to be done in connection with the optical defects of the eye. Minor advances were subsequently made by his pupils and others, chief of which was the perfecting of ophthalmometry, which, from being a subject of scientific interest alone, from the researches made with the ophthalmometer of Helmholtz, became by the introduction of the clinical ophthalmometer a useful and rapid aid to diagnosis.

Throughout the century the pathological anatomy of the eye advanced *pari passu* with the knowledge of general pathology. In not a few instances, too, experimental pathological investigations begun in connection with the eye cast some light on general pathology.

With improved methods of examination, ophthalmoscopy, perimetry, and the more accurate study of the peculiarities connected with diplopia from different causes, the localisation of disease of the central nervous system and elsewhere has been aided. The cornea has been used for experimental researches which have added greatly to the knowledge of the nature of inflammation in general. Apart, however, from scientific interest and the light thrown on general pathology, it can hardly be said that the gradually accumulated and now extensive knowledge of special pathology has had any appreciable influence for good as regards the treatment of local eye affections.

A far more important influence on treatment has been exercised by antiseptics. In common with the surgery of other regions of the body, the surgery of the eye has benefited greatly by the introduction of antiseptic and aseptic measures. This and the discovery of the means of producing local anæsthesia and the more recently acquired knowledge of the bacteriology of eye affections, have constituted the main advances of the latter portion of last century. Though of somewhat limited applicability, the use of the magnet for the removal of iron and steel particles from the eye has also added a means of saving sight which we owe to the latter part of last century.

Mydriatics were introduced at the beginning of the century, and myotics in the latter half. Both have proved of great value, the first in the treatment of iritis and cyclitis, and the second in the treatment of congestive glaucoma.

The modern ophthalmology which began with v. Graefe, owing to the greatly increased mass of scientific and practical knowledge required of the properly trained ophthalmic surgeon, has tended more and more to justify the position of the medical specialist in eye diseases. In addition, the very rapid advances made in general surgery since the introduction of antiseptics have so added to the scope of the surgeon, that it is now comparatively rarely that the practice of surgery and ophthalmic surgery are undertaken by the same individual.

With special journals devoted to ophthalmology, it has become increasingly seldom that any of the more important work in connection with the eye finds its way into the pages of journals devoted to surgery and medicine.

What applies to surgery applies no doubt also to medicine. The mass of facts that are constantly being accumulated, the newer ideas that originate from the discoveries made by experimental medicine, do not leave an opportunity for the physician to devote much time to eye diseases. With these advances it may be hoped, however, that in time an advance will be made in ophthalmic medicine. The crude ideas which pertained throughout the first half of last century on the relations supposed to exist between general states of the system and affections of the eye, have given place to others which, though less fanciful, are yet far from being satisfactory. The treatment of medical eye affections has been simplified, but is as yet no further advanced than that which prevails in connection with general medicine. Some seventy or eighty papers on special ophthalmic subjects have appeared in the pages of the Journal. Many of these are valuable contributions, although few record any of the really important advances that have been made.

The first paper of importance appeared in vol. iii. In it Wardrop described the effect of evacuating the aqueous humour in clearing away the haze of the cornea in congestive attacks of the eye accompanied by increased intra-ocular tension. He also recommended this paracentesis for cases of hypopyon keratitis. Wardrop's treatment met with acceptance, and was adopted by many of the British oculists of the day. It seems to have proved of some service before the more thorough and more lasting effect to be got by iridectomy was discovered. Ware had previously advocated and practised puncture of the sclera for glaucoma. British surgeons were thus in a measure the originators of operative treatment for glaucoma.

In vol. vii. of the Journal, the first complete description was given by Lyall of the condition of conical cornea, under the name of staphyloma pellucidum. In that paper he gave an account of the course of several cases which he had observed, with the effect of treatment by paracentesis. Gibson and Wardrop in this country had previously referred incidentally to conical cornea, the first notice of which seems to have been due to Scarpa.

Vol. vii. also contains an important communication by Gibson on "Operation for Cataract in Early Infancy." He seems to have been the first, in this country at all events, to advocate early interference. His reason for this was the greater tendency to absorption of the lens after laceration of the capsule which he believed was met with in infancy. The practice was no doubt a good one, although the modern ideas as to the reasons for recommending it may have altered.

In the year 1834, Wharton Jones demonstrated that dilatation of the pupil was an active, and not, as had hitherto been supposed, a passive process. His paper on this subject appeared in vol. xli. of the Journal, and, though sufficiently convincing, bears no evidence of any knowledge of the mechanism by which such active dilatation is produced. The influence of the sympathetic was afterwards shown by John Reid, and his experiments published in the Journal in 1839. In a still later volume (vol. lxxx.) a complete translation of the exhaustive work of the Bonn physiologist Budge was published, in which the influence of the nervous system on the movements of the iris is very fully recorded, and the subject elucidated to an extent which, though to some degree amplified since, corresponds pretty much to our present-day knowledge.

One of the most valuable contributions of the old school of ophthalmic surgery is contained in vol. lxiv. This is an exhaustive treatise on "The Vision of Objects on and in the Eye," by Mackenzie. In it are described in great detail, and in the most masterly manner, all the various subjective symptoms, with the causes which give rise to them. These different muscæ, spectra, etc., as they are called, afforded the principal means of diagnosis, and their correct interpretation was therefore of much importance before, by the invention of the ophthalmoscope, the objective examination of the deeper parts of the eye became possible.

The same volume contains a communication by Watson, in which there is given one of the first accurate descriptions of serous irido-cyclitis. The condition now recognised by that name is called by the author inflammation of the membrane of the aqueous humour of the eye.

The eighth volume of the new series contains an account of "The Action of Calabar Bean on the Eye," by Argyll Robertson. The myotic effect of a local application of this drug had already been observed by Fraser. The thorough investigation of its action, not only on the pupil, but on the ciliary muscle, was first made by Robertson, who for some time previous to this discovery had been on the lookout for a vegetable product which might have antagonistic effects to those produced by belladonna. The importance of induced myosis in glaucoma was afterwards discovered by Laqueur.

In the fifteenth volume, Argyll Robertson described a peculiarity met with in myosis of spinal origin. This has since been recognised as an important diagnostic symptom. The condition is that of reflex immobility of the sphincter iridis, and often goes by the name of the Argyll Robertson pupil.

As a matter of deep interest to the physician, must be mentioned also the important observations of Gairdner and Argyll Robertson on the paralysis of the sympathetic fibres going to the iris in consequence of pressure upon them by morbid conditions within the thorax.

OTOLOGY, LARYNGOLOGY, AND RHINOLOGY.

By P. M'Bride, M.D., F.R.C.P.Ed., F.R.S.E.

The time relationship as to birth and development between otology on the one hand, and laryngology, with her sister specialty rhinology on the other, is somewhat of a contrast. In a sense the study of ear disease is almost as old as the period covered by the history of medicine, but until near the middle of last century little real progress had been made from the clinical point of view, although even much earlier the anatomy of the organ of hearing had been carefully studied. Indeed, Valsalva was very fully acquainted with the structure of the parts, and it must be admitted of this author that he even made some very valuable observations on diseases of the ear. Again, Guyot, the well-known Versailles postmaster, performed catheterisation of the Eustachian tubes through the mouth in order to relieve himself from deafness in 1724; and seventeen years later, Cleland, a British army surgeon, advised employing an instrument passed through the nose. In the same century we find that Petit opened the mastoid, and towards its close paracentesis of the tympanic membrane was first performed. In this connection it is interesting to note that while Cheselden and Sir Astley Cooper generally share the credit of having introduced perforation of the drum membrane into aural therapeutics, it is extremely probable that the discovery really belonged to a certain Peter Degravers of Edinburgh, as the following quotation from Sir William Wilde's "Aural Surgery," 1853, p. 15, will show:—"In 1788, Dr. Peter Degravers, who styled himself Professor of Anatomy and Physiology, published in Edinburgh 'A Treatise on the Human Ear' as an addenda to the second edition of his 'Physico-Medical and Chirurgical Treatise on the Human Eye.' This tract consists of sixty-two pages, and is divided into three parts—'The Anatomical Exposition,' 'The Physiological Inquiry into the Origin of Sounds,' 'The External and Internal Disorders of the Ear.' The work, though very much beneath that of the author's observations on the 'Diseases and Operations of the Eye,' is yet intelligible enough, and came up fully to the state of knowledge on aural surgery at that time. It is generally believed that Sir Astley Cooper was the first person who perforated the membrana tympani; Degravers, however, tells us in his essay that he completely removed the tympanic membrane in one case; and again he says: 'I incised the membrana tympani of the right ear with a sharp, long, but small lancet. I left the patient in that state for some time, and afterwards observed that it had reunited, etc.'" The space at my disposal does not admit of dipping further into the early history of otology, but before passing on I must refer to the fact that at a relatively early period the education of deaf mutes had already made considerable progress. Cardan (1501 A.D.) in Italy was followed by Ponce de Leon in Spain (born 1520), and these two seem to have first introduced the oral method which is now admittedly the most desirable form of educating the deaf. The French or sign system appears to have been of later growth, and owed its long-continued popularity to the zeal and self-sacrifice of the Abbé de l'Epée, who was only born in 1712. Strangely enough, he began with oral instruction, but abandoned it in favour of sign language. Passing now from ancient to relatively modern history, we find that the first part of last century was devoid of any epoch-making work in otology. In 1843, however, Sir William Wilde of Dublin published his text-book, which rested more on clinical observation than pathology; and in 1860 appeared the work of Toynbee, who may be said to have laid the foundation of modern aural surgery by his anatomical studies, both normal and morbid. It is of interest to note that one of his early contributions appeared in this Journal[1] in the form of an elaborate histological study of the human tympanic membrane.

In marked contrast with otology, which may be said to have grown laboriously, slowly, and surrounded by the shadows of charlatanism and quackery up to near the middle of last century, and then to have sprung suddenly into the position of a respectable and respected specialty, we find the short history of laryngology and rhinology. Senn of Geneva was probably the first to use a small mirror introduced into the pharynx for the purpose of seeing the deeper parts, in 1827; then Babington of London employed an instrument which, according to Morell Mackenzie, closely resembled the laryngoscope of to-day, but, curiously enough, he failed in his object. Space does not permit me to trace laryngoscopy through all the unsuccessful efforts which at last resulted not only in its discovery but in its practical application. There are, however, two names of peculiar interest to our readers which are prominently connected with the early history of laryngology. In 1840, Liston stated that the existence of swelling in the larynx might sometimes be ascertained by introducing "such a glass as is used by dentists on a long stalk, previously dipped in hot water, introduced with its reflecting surface downwards." In this connection it may also be noted that Liston in this Journal[2] described a case of laryngeal stenosis after cut throat, in which he dilated successfully from the tracheotomy wound. In 1844, Warden of Edinburgh endeavoured to see the larynx by means of prisms. The real founder of laryngoscopy, however, was neither a physician nor a surgeon. In 1854, Signor Manuel Garcia, a teacher of singing in London, began to make observations on his own vocal cords during voice production, and published the results in the following year. Strangely enough, British medical men seem to have missed the importance of this discovery, and it was left for two Austrians, Türck and Czermak, to develop it further. The venerable discoverer, Signor Garcia, is still with us, and we hope to celebrate his centenary in a fitting manner next year. A remarkable fact is the extraordinary rapidity with which laryngology reached a stage of comparative maturity which is not usually attained by a special department of medicine in half a century. This must strike any one who compares Türck's great work with the latest of modern authors. Rhinology is in a sense even more modern than laryngology. It is true that Bozzini, a physician practising in Frankfurt, recommended inspection of the posterior nares by means of a mirror in 1807, but the practical application of the method only followed a paper published by Czermak in 1859. In the same year Markusovsky laid the foundation of scientific anterior rhinoscopy by the introduction of a nasal speculum: but it was reserved for Voltolini, Thudichum, Duplay, Fränkel, and Michel to perfect this method of examination within comparatively recent times.

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[1] Vol. lxxvii. p. 320.

[2] Vol. xxix. p. 118.

Having now passed in outline the progress of these three specialties—otology, laryngology, and rhinology—up to what we may term their modern scientific position, it may be of interest to glance briefly at their further development, and here, with the limited space at my disposal, it is only possible to touch upon one or two points. In otology, methods of examination have not of late years made any great advance. Indeed, objective examination remains very much where it was after the introduction of reflected light for inspection of the membrana tympani, posterior rhinoscopy, and the Eustachian catheter. In rhinology there is more to chronicle. The introduction of the palate hook by Voltolini enables us to introduce a large mirror, and thus obtain a better view of the posterior nares; it has further been shown that if the palate be pulled forward and the head thrown back, the vault of the naso-pharynx is thrown open to direct inspection. The limits of anterior rhinoscopy have been to some extent increased by Killian's method of median rhinoscopy. Again, the whole subject of empyema of the nasal accessory cavities is relatively new. The introduction of examination by transmitted light by Voltolini and Heryng for the antrum, and Vohsen for the frontal sinus, has advanced our methods of diagnosis to no small extent. The X-rays, however, used for the same purpose, have so far not added very materially to our means of diagnosis. The most remarkable extension of objective examination has taken place in the domain of laryngology, and this extension threatens in the near future to materially widen the limits of laryngological practice. I am irresistibly reminded here of a saying commonly attributed to a well-known general surgeon. In discussing the future of surgery, he remarked that what with the gynæcologist working from below and the aurist and laryngologist from above, there would soon be only a very small area in the neighbourhood of the umbilicus left for him and his confrères. A true word is often spoken in jest. Quite a long time ago, Voltolini showed that if the tongue be pulled out, its posterior part depressed with a spatula, and the patient made to retch, the epiglottis and sometimes the arytenoid cartilages can be seen. As a further development of the method, we may look upon Kirstein's autoscopy. This observer found that if the head be thrown back and the tongue forced forward together with the epiglottis, the whole larynx may be inspected directly. Based upon this method is the startling development of bronchoscopy, as introduced by Killian of Freiburg. He began by introducing a straight tube through the vocal cords into the trachea; he now passes the tube not only into the trachea, but into one or other bronchus. This proceeding requires thorough cocainisation of the pharynx and larynx, and so far as possible of the subglottic space. In irritable patients the application of cocaine is preceded by an injection of morphia, or, in extreme cases of hyperæsthesia, a general anæsthetic[1] may be used. The patient sits low with his head back, and the bronchoscopic tube is passed into the larynx, the tongue being forced well forwards. The patient is directed to take a full inspiration, and during this, the tube is made to pass the glottis. The trachea may now be cocainised through the tube, and the latter passed on to the bifurcation. According to von Eicken, bronchoscopy proper, which means the introduction of the tube not only into the trachea, but from it into one or other bronchus, frequently requires a general anæsthetic. Of course, the tube employed has a smaller calibre and greater length. It is recommended to expose the larynx by means of Kirstein's spatula, and thus enter the subglottic space with the bronchoscope. Before the last-named instrument is passed into one or other bronchus, cocaine must be freely applied below the bifurcation. As Killian has pointed out, the bronchi can be examined by means of a straight tube, as a little practice enables the observer to introduce the speculum, and when this is done it is not difficult to bring the bronchus towards the axis of the trachea. This method has been found most invaluable in cases of foreign bodies, not only by Killian but by other continental observers. It may also be employed as an aid to medical diagnosis. von Eicken records several such instances, but a reference to one only is required to illustrate my point. In a case of physical changes at the right pulmonary apex in a girl with tubercle bacilli, bronchoscopy was employed to confirm the diagnosis. To quote from the record: "The bronchus leading to the upper lobe was then to be sought. This attempt succeeded very easily and without serious discomfort to the patient. The tube was passed into the right chief bronchus, pressed a little outwards and gently onwards. Everywhere a thin, smooth mucosa was found, through which the cartilage could be readily made out. Soon the right upper lobe bronchus came into view. . . . When the tube (*i.e.* bronchoscope) was pressed above strongly to the left, thus forcing the lower end to the right, it was possible, when the patient's head was bent towards the left shoulder, to pass the tube half a centimetre into the bronchus for the upper lobe." It may be urged that the method above referred to requires so much manual dexterity that it must remain in the hands of those who are constantly manipulating the upper air passages by way of the mouth. It must be remembered that Pieniazek has long since advocated examination of the trachea by way of a tracheotomy wound, and using for the purpose straight tubes. Killian's method of examination can be carried out in the same way, and thus after tracheotomy the bronchi become open to examination without any great manipulative skill being required.

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[1] Where this is employed, the patient lies on his back with the head over the end of the couch or table.

A method closely allied, but of much older date, is modern œsophagoscopy. Stoerck of Vienna and Morell Mackenzie of London invented instruments for this purpose, but they were not convenient for general use. In 1868, Kussmaul was able to see an œsophageal carcinoma by using a straight tube; and later, this method was practised by Mikulicz, Hacker, and Rosenheim. There can be little doubt that the elaboration of œsophagoscopy in Germany has led to much more exact diagnosis, and has been of great value in certain cases, more particularly in assisting in the diagnosis and removal of foreign bodies. Space does not permit me to dwell longer upon tracheoscopy, bronchoscopy, and œsophagoscopy. It seems to me that, if their further development be left in this country to the specialist only, it almost follows that with their elaboration the laryngologist must of necessity extend the area of his operative activity. He must not only be prepared to diagnose, for if diagnosis be left to him he naturally falls heir to the treatment of such cases. His will then become a large part of pulmonary surgery by right of bronchoscopy, and a good deal of abdominal surgery by right of œsophagoscopy, which, of course, enables the observer to inspect the lining membrane of the cardiac end of the stomach even now. Perhaps I have dwelt too long upon the progress of physical examination, but it appears to me that the methods to which I have just referred are not sufficiently known in this country. The only alternative proposition seems to me to be that if they are known they have not been appraised at their proper value.

Very little space is left me to refer to other advances. In otology, activity has been chiefly in the direction of surgery. There can be no doubt that immense strides have been made in the treatment of suppurative middle ear disease and its complications. On the other hand, with regard to many cases of chronic progressive deafness, we are now as helpless as were the aurists of old. The discovery and appropriate treatment of adenoids has, however, saved the hearing of many; and it is no wonder that Copenhagen cherishes the memory of Meyer, who was the first to draw attention to this affection.

In rhinology there has been a great deal of activity in the direction of surgical treatment. Time does not permit me to discuss or even to refer to the many burning questions which present themselves to every thoughtful observer who has kept himself up to date in the modern literature dealing with the subject. The whole question of nasal reflex neurosis may be said to be still *sub judice*, although, of course, many important and interesting facts have been recorded in this connection. Is absolutely perfect nasal respiration an essential of health? Here we find that those who have studied the matter answer with different voices. Is nasal obstruction—apart from gross lesions of the naso-pharynx, such as adenoids—really a very frequent cause of chronic middle ear thickening? is a question which is answered by some in the positive and by others in the negative sense. The whole study of empyema of the accessory cavities is of recent growth. Has not surgery been somewhat too busy in some of these cases—more particularly in instances of moderate involvement of the frontal sinus? I think this whole question requires revision, but have instanced the frontal sinus because there are special risks in opening it—risks which probably make it safer for the patient to bear with a moderate amount of discharge, provided no symptoms of retention are associated with it.

In laryngology there have been a few very important advances in therapeutics. Apart from the serum treatment of diphtheria, and the increased facility of endo-laryngeal operating due to a combination of circumstances, *e.g.*, improved manipulation and instruments, together with the introduction of cocaine, I may cite the treatment of tubercle and cancer. It is not long since phthisis laryngea was looked upon as practically incurable. Now every laryngologist of experience has met with cases where healing of tuberculous ulcers and disappearance of infiltrations has occurred. With regard to carcinoma, immense strides have been made. Until recent years the early diagnosis of laryngeal cancer was never made, but chiefly owing to the work of Semon we are now able to diagnose the condition in many cases with tolerable certainty at its commencement. As investigation goes on, it becomes more and more certain that in the large proportion of cases epithelioma begins in the vocal cord. Butlin many years ago recommended thyrotomy for such cases, and both he and Semon have had results by this method which must be spoken of as remarkable, whether we consider them from the point of view of voice preservation or absence of recurrence.

In these few pages I have only been able to say enough to enable the reader to follow the main outlines of the development of otology, rhinology, and laryngology.

There are many interesting problems suggested by them, on which space has not permitted me to touch. I have attempted to pass in review the salient points of the last hundred years. It is interesting, if not perhaps profitable, to speculate what advances and what subdivisions, necessitated by the growth of material and literature, may result in the course of the next century.

DERMATOLOGY.

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It is with mixed feelings that one turns over the dry withered leaves of old periodicals. The paper smells musty, the ink has become brown, the style is unfamiliar and quaint, and the ideas appear often crude to our modern notions. Yet every here and there one encounters an article which rivets our attention, which reflects a mind in advance of the age, and discloses to us that conceptions we had fancied new were but restatements, in slightly altered language, of already well-ascertained facts. In the earlier volumes of this Journal the names are but shades to us, possibly of men we have read or heard, but who had passed away and been forgotten long ere our day. As we advance to a period closer to our own, figures which had faded into oblivion rehabilitate themselves, and the teacher of our student days again addresses us in terms painfully familiar, or the cherished friend or valued colleague looms more or less vividly before our vision, and we almost hear his well-remembered tones. Such thoughts crossed my mind in handling the tomes in a search for contributions dealing with cutaneous subjects. One was forcibly struck with the wholly different way in which integumentary ailments were regarded a century or less ago, as compared with our bearing towards them now. Questions finally settled or possibly shelved for the nonce as insoluble, then greatly exercised the professional intelligence. While new remedies were being discovered, their numbers were inconsiderable in comparison with to-day. Chemistry was in its infancy, and had not to any great extent come to the aid of medicine; practitioners compounded their own drugs; pharmaceutical firms only existed in the larger towns, and these had assuredly not developed the energy which they exhibit in showering down ever fresh nostrums with curious names, each one attested by individuals little known as having properties infinitely superior to any which had preceded it, and in turn to be replaced by another combination reputed still better. In this *embarras de richesses* one is inclined to sigh for a return to times of the two simples, calomy and laudamy. Some very important, almost epoch-making articles have in their day graced these pages, and there are numerous minor contributions whose perusal even now affords pleasure, and which may be read with profit.

The treatment of syphilis was a hundred years ago in a very unsatisfactory state. The distinction between the hard and the soft sore, if known, was not familiar. Mercury was still abused, though not to the same scandalous extent as it had been; while as iodine was not discovered till 1812, its virtues were undreamed of. It is interesting to observe that the first number opens with "The History of Three Cases of Erythema Mercuriale, with Observations," by Thomas Spens, M.D., *P*.R.C.P., and in the following volume there is an article by M'Mullin on the same subject. Though all the patients had taken or used mercury in some form, there is but indifferent evidence that the severe form of eczema, or of exfoliative dermatitis with putrid crusts, was rightly ascribable to the drug. One example was plainly chancroid and not syphilis, and the plentiful employment of mercury to which he was subjected was wholly uncalled for. In another, the small amount given by inunction can hardly, even admitting idiosyncrasy, with reason account for the attack of acute general eczema which overtook her. In yet another there is no evidence adduced to prove whether the man had syphilis or merely a soft sore. He was, however, subjected to inunction till his mouth became sore, and the acute inflammation of the skin which forthwith developed continued till his death. Though there was in all an erythematous state to commence with, the symptoms far exceeded what is now considered erythema. Exposure to cold was regarded as the exciting cause, but it may well be doubted if the febrile condition which arose is wholly explicable on this assumption. It is at least satisfactory to learn that for this acute dermatitis a rational treatment was devised, as it was fortunately discovered that most relief was obtained from the constant application of linimentum calcis.

In the same early volume we have an illustration of the alteration in nomenclature which has taken place in the interval, and which renders it so difficult to identify skin diseases at particular epochs. Barlow, a Lancashire practitioner, recommends a lotion of potassa sulphurata in tinea capitis. By this term now is understood ringworm of the scalp; but at that era this complaint was not suspected to be parasitic, and the ailment so designated was apparently what we at present call impetigo contagiosa. The curative formula which he gives would apply equally to this or to a seborrhœic dermatitis with or without concomitant pediculosis: "℞ Kali sulphurat. recens præp. ʒiij. Sapo alb. Hispan. ʒi. Aq. calcis ℥viij. Sp. vin. rect. ʒii." This he sopped on night and morning, suffering the parts to dry, when the scabs resulting peeled off and left a surface beneath perfectly healed. Dr. Kellie of Leith has a thoughtful article on "The Functions of the Skin." These he considers only under two heads, "Perspiration" and "Inhalation or Cutaneous Absorption." He concludes from an analysis of the writing of others, for he does not appear to have conducted any experiments himself, that only watery exhalations escape from the surface of the body; he had not been able to satisfy himself that gaseous elements transpire through the skin. He is inclined to believe that the skin inhales as well as exhales, though the arguments cited therefor are rather confused. On one morbid condition treatment was a century ago nearly as far advanced as now, that of ulcerated legs. Just at that time Baynton introduced the method of strapping with strips of litharge plaster, a mode of cure which has held its own as the best to this day, when combined with firm and accurately applied bandages.

The names of Willan and Bateman in Britain, and of Alibert in France, remain indelibly associated with the classification of skin diseases, and of the method of isolation from morbid conditions in general. Of the three, the first two undoubtedly exercised a profound influence on the mode in which these ailments were viewed, so that it is no wonder that a considerable space was devoted in several volumes to an analysis and a criticism of their writings. Willan seems to have been a man of remarkable energy and devotion to study, as appears from a good biographical notice. Though no doubt Plenck preceded him, yet he had but little in the past to guide him in drawing up his scheme of classification, arranged, as is well known, on the basis of the external form assumed by the disease. It therefore reflects credit on the acuteness of his observation that many of his definitions continue without material alteration to the present time. Not living long enough to complete his task himself, he was fortunate in having as his successor Bateman, a man thoroughly imbued with the spirit of his master, able to carry on the work on the same clear and independent lines. Alibert had one advantage over his British rivals, that his delineations were executed on a much more elaborate scale; but in the accompanying letterpress he brought his own personality too prominently to the front, and an atmosphere of vanity tainted his pages, while he was deficient in that precision in description which had made Willan and Bateman such prominent figures in the history of medicine. Willan, however, fell into a curious error, which still modifies opinion among the ranks of the profession in general. He somehow confused true leprosy and psoriasis. He describes them indeed separately, but it is evident that the account he gives of leprosy is only applicable to psoriasis. Yet in Willan's time, leprosy, as an endemic disease, had wholly vanished, and if any instances still lingered in remote districts, such as the Shetland isles, such could not have come directly under his cognisance. Similarly he did not clearly discriminate between leprosy and scleroderma, and it was his teaching with regard to this point which probably led Wilson, at a later period, to look upon morphœa or circumscribed scleroderma as a lineal descendant of leprosy. As some authors still do, they included the exanthemata under cutaneous disorders, and we owe to Bateman a carefully reasoned and well-deserved eulogium on the benefits of cold bathing or sponging in scarlet fever. In Alibert's work there are descriptions and allusions which are to us inexplicable. Thus he catalogues many varieties of a mysterious and dangerous disorder called plica, which corresponds to nothing encountered at the present day. It essentially consisted in felting of the hair to a formidable extent, but with this there were severe local and constitutional symptoms, which can only have had this capillary complication accidentally associated with them. Plica is now practically unknown, but another term much used by Alibert still holds its ground, and is the cause of some confusion. He detailed a large contingent of herpetic eruptions under the name of herpes with an affix, and it has been the task of dermatologists ever since to prune off these excrescences one by one, and so to reduce the number to a very few. It is not at all evident on what ground the designation was selected. It was not from its derivation, for in several of its genera the advancing or creeping character was not conspicuous. Herpes as an appellation was unfortunate, and long retarded progress.

At a rather later date, in 1817, Marshall Hall brought into prominence a difficulty which Willan and Bateman's classification offers from a practical point of view. On their system, he remarks, it is necessary to assume that the different genera and species of cutaneous affections are really and purely papular, scaly, exanthematous, pustular, vesicular, etc. It is, however, well known that skin diseases are frequently, nay generally, of a double or mixed character, papules and vesicles being coexistent with an exanthem, pustules with vesicles, etc. Any artificial classification inevitably separates affections which agree in general similarity, and which are, consequently, of difficult diagnosis, when they do not happen to coincide in that particular feature or circumstance on which the classification is founded. He suggests that, to promote the discrimination of individual diseases, cutaneous affections should be arranged on the principle of general similitude, and so correct many of the imperfections of an artificial arrangement and facilitate diagnosis. It occasionally occurs that some particular ailment is so peculiar in form, and stands so apart from others, that it may occupy an isolated station, and thus the valuable information is conveyed that the disease in question is not liable to be mistaken for any other. If, again, the same affection in its different forms, or in various stages of its progress, should resemble two or more distinct genera of cutaneous diseases, it may have to be placed in two or more separate divisions of the classification.

Two valuable papers find a place in the volume for 1818, by Thomson and Hennen, both army surgeons, on the "Cure of

Syphilis without Mercury." Temperately worded, the writers by no means deny that mercury has an effect, especially in causing cutaneous manifestations to disappear speedily, but they are anxious to ascertain the natural course of syphilis, more particularly as even then the diagnosis was not certain, and simple ulcers and other ailments of wholly different origin were indiscriminately subjected to prolonged and severe mercurial courses. There can be no doubt that the constitutions of those submitted to such unreasonable measures were thereby undermined, and that the destructive lesions then so prevalent did owe much of their virulence to mischievous medication. On the other hand, the value attached to the administration of sarsaparilla or guaiacum was pitched too high. The time had not yet arrived when patients would have consented to a plain dietetic and hygienic cure. The belief in the efficacy of drugs, so strong an article of faith in the minds of the laity now, evidenced by the immense consumption of pills and other patent and proprietary medicines, was universal then; and Hughes Bennett himself could hardly, with all his power of demonstration, convince practitioners of a much more recent date, that in many diseases nature, given but a free hand, was capable of accomplishing a cure. The articles under consideration are nevertheless imbued with a spirit of great earnestness. It was inevitable, however, that statements such as these, unsupported by narratives of cases, would evoke controversy. Hence Butter, in the volume for 1819, criticises their arguments, and lays bare the weak places. He shows most conclusively that before deciding on abandoning mercury we must first exclude those disorders which resemble syphilis, and were frequently confused with it. He appears to regard syphilis as a comparatively rare disease in comparison with its counterfeits. He advocates the rational and cautious employment of mercury in undoubted examples, while he deplores the disastrous consequences which had resulted from its reckless exhibition. His contention is admirably summed up in the following sentence:—"The fault, therefore, lies not in the absolute rejection of mercury, but in the unskilful use of it; in taking up principles slightly from superficial observations made on a few facts, unwarrantably generalised."

In 1837 a series of cases illustrative of the valuable effects of iodide of potass in tertiary syphilitic lesions are published by Bullock. In some instances the history was defective, as is frequently the case, but the recorded appearances were quite characteristic. The dose was in all the moderate one of 8 grs. thrice a day. It is important to observe this fact of dosage. It is much too often stated and acted on that in the treatment of tertiary lesions much larger amounts are necessary. Such may in rare cases be required, but, as a general rule, it may be most positively asserted that the maximum of 10 grs., three times daily, taken well diluted, need never be exceeded. The iodide is excreted by the kidneys with great rapidity, and unless this were so, serious, nay fatal symptoms, due to iodism, would be much more common. As a preliminary to the administration of iodide, the integrity and efficiency of the kidneys should be verified in all cases.

The close association which existed during the early part of last century with the West Indies would lead us to expect that any endemic diseases presenting remarkable features would engross the attention of medical men having practices there. Frambœsia or yaws exhibits such peculiar characteristics, that it is not surprising that three articles directly concerned with it are found in this Journal at that time. All convey a clear conception of the disorder, but that by Mr. Mason in 1831 is the most complete, while Thomson in 1819 gives a good coloured representation of the appearances at various stages, and Dr. Rankine in 1827 falls into the error of assuming that elephantiasis never occurs but as a sequel of yaws, a deduction based on limited observation. All concur in the view that yaws and syphilis are entirely separate complaints, and all are equally unanimous that mercury has little if any influence on the course of yaws, that it is especially harmful in the early stage, just when its value in syphilis is most marked, and that its exhibition, if pushed, is disastrous to the health and even to the life of the affected individual.

Curiously enough, Thomson holds that sibbens and yaws are identical, an idea again revived by Wills of Cumnock in 1844, though a careful consideration of the cases he records, demonstrates that what he looked on as typical yaw tubercles were nothing else than condylomata. Yaws ought to be regarded as one member of a group of syphiloid diseases, no doubt resembling the prototype in many particulars, yet at the same time radically distinct.

A century ago, leprosy as an endemic disease had ceased to exist in Britain, hence perhaps the reason why, with one notable exception, it has not obtained very much notice. In 1822 and again in 1837 an elaborate résumé of the literature on its manifestations in Norway, the Faroe Isles, and on the shores of the Baltic, appears in the "Critical Analysis." The author is not disposed to concede that the disease as occurring in these latitudes is the same as Oriental leprosy. It is divided, too, by him into Radesyge and Spetälska, and these again are differentiated from syphilis, but the distinguishing characters as formulated by him are by no means as clear or the description he furnishes as convincing as one would like. He says, "While we refuse to admit the radesyge to be either a relic or a modification of the true leprosy of the Middle Ages, we cannot pretend to suggest any other cutaneous or cachectic disease to which, either as species or variety, it may be referred." It is, however, now accepted that radesyge was nothing else than syphilis. By an antiphlogistic regimen, approaching almost to starvation, aided by the alterative and sedative effects of antimonial medicines and decoctions of diaphoretic woods, it had been reported that the symptoms had been completely subdued, and the patients restored in many instances to exceedingly good health. He is inclined to discredit the influence of these remedies, and ascribes any result to "the absolute quietude and shelter from causes of aggravation that are the true sanative means in this and similar complaints, and demonstrate that it is susceptible of a spontaneous cure." But one paper of the highest importance graced these pages in 1841, Sir J. Y. Simpson's "Antiquarian Notices of Leprosy and Leper Hospitals in Scotland and England." Culled from every accessible source, and presented with all its accomplished author's fascination of style and language, it will remain for ever the monograph on the subject. It was certainly one of his happiest literary efforts.

From the circumstance that molluscum contagiosum was first figured by Bateman, and that the earliest descriptions of it were by Professor Henderson and Dr. Paterson of Leith in the volume for 1841, the disease possesses a peculiar interest to observers in this country. These latter authors note that up till that time no account of it had appeared in any foreign journal, and Henderson even went so far as to say that he regarded it as one of the rarest of cutaneous diseases. This can hardly be affirmed now, as cases are not infrequent at the Royal Infirmary. Another observation which Paterson is responsible for is that in its inception it seems to be an infantile complaint. It is encountered in adults, but in most if not all cases the source can be traced to contagion from a child. It would seem, then, as if the more delicate juvenile integument offers a medium more favourable for the development of the virus than does the tougher skin of the older individual. It may be that this, which is probably of a parasitic nature and derived from an external source, needs cultivation to intensify its properties. Its pathological resemblance to epithelioma has been often commented on, and we may succeed in discovering some agent, parasitic or not, which can so impress the integumentary epithelial cells as to cause them to take on this special mode of growth, just as the X-rays possess an inhibiting action on this when the bias is acquired. In 1851, Craigie describes a case of molluscum fibrosum as a variety or at least allied to molluscum contagiosum, though the portrait he draws is that of a wholly different condition.

It has frequently been remarked that in many respects the views of the late Dr. Laycock were in advance of his time. He most certainly anticipated the microbic theory of disease, and his article in 1857 on "The Contagious Furunculoid" exemplifies this very fully. He there states that in cutaneous diseases a wider application must be given to the doctrine of a parasitic and contagious nature, and that merely local characteristics will have to be studied in reference to constitutional states. After alluding to the more common and accepted varieties due to known animal and vegetable parasites, he observes: "There are other diseases of a chronic and obstinate character, in which, although microscopic research has failed to demonstrate a parasitic cause or a contagious nature, observation and analogy would lead us to classify them in the same group." Proceeding from this, he cites furuncles with or without vesication (impetigo contagiosa), ecthyma and carbuncle and whitlow. The most interesting point is his noticing the frequency with which auto-infection occurs, how readily the disease is conveyed from one locality to another, and his rejection of the erroneous, though even yet prevalent idea, that the eruption of boils can have any depurative effect. In treatment, he urges the necessity of protection of the surface from further infection, either by rendering the furuncles abortive, or by guarding the yet sound skin from contamination. "No application is worse than a common linseed poultice, for it usually is followed by a fresh crop of boils, nor do oleaginous applications do much better."

There are few contributions to the discussion of the physiology of the skin, but in 1860 Dr. Edward Smith traces in masterly fashion the action of the skin in the production and treatment of disease. He accentuates the relation which exists between the acidity of the perspiration and the diminished alkalinity of the blood. "The action of the skin tends to maintain the required equilibrium, or rather, by the constant elimination of acid, to render the blood more alkaline. . . . The practical importance of this question is this—Is the amount of acid eliminated by the skin an indication of the amount existing in the body, so as to become a guide to treatment? The indication of the presence of much excess of acid in the perspiration is readily determined by the sense of smell, for in such cases the patients are disagreeably aware of a strong acid and offensive odour. . . . Hence the organs which are more particularly in correlation with the skin are not the lungs, but clearly the kidneys, as is seen both by their common power of eliminating water with free acid and peculiar matters, and by the vicarious action which each can, in a degree, undertake for the other, as is commonly observed in reference to water by the kidney, and more rarely in the excretion of urea by the skin." His recommendation of free inunction with oil in over-activity of the skin with sensations of chilliness, is not even now taken advantage of as frequently and fully as it deserves.

At somewhat rare intervals, lighter topics were permitted to occupy a little space. An instance occurs in 1862, in the shape of an amusing and common-sense paper from the pen of Mercer Adams, entitled "Is Shaving injurious to the Health? A Plea for the Beard." Only a very few years before, a gentleman who had grown a beard during a visit to the Holy Land was prohibited from practising as an insurance broker in London unless the obnoxious appendage were forthwith removed. But the return of our hirsute veterans from the Crimea, the Volunteer movement, and the arrival in this country of Australians, who had grown rich in gold-mining or sheep-farming, wearing the full beard, completely changed public opinion, and since then, though never universal, beards are in all classes a matter of choice. Adam considers the question from the historical, the cosmetic, and the hygienic aspect, but he does not allude to the real danger of shaving, the chance of contracting disgusting and troublesome skin complaints, or in some instances even more serious diseases, if the public barber's shop is frequented. No possible certain method of prophylaxis is attainable; great cleanliness may lessen the risk, but it exists and will exist. Attempts have recently been made to discredit the retention of hair on the face as a carrier of microbic infection, but the same applies equally if not more to the scalp hair, which is not, as a rule, washed with anything like the same frequency or care as the beard or moustache.

Having reached the limits of my allotted space, it is impossible to refer to the articles which appeared during the latter part of last century, but there is one which marks the turning-point in dermatology, written by Tilbury Fox in 1867. It is entitled "On the Neglect of the Study of Skin Diseases in England." A remark he made then is yet applicable: "The press has already pronounced the verdict that more ignorance prevails in skin matters than in any other branch of medicine, and that far too little is known by the majority of us of the most ordinary eruptions of the surface." Only two observations in his excellent paper will be noticed here. The first, that we must be chary in recklessly adopting treatment for our patients here, however highly recommended by foreign practitioners. The second is a warning against the indiscriminate prescription of arsenic. "Many diseases which we try to cure by arsenic are practically local." . . . "I have seen too many failures not to know that the fulsome praise bestowed upon its virtues is overdrawn." His arguments bore fruit in time. There is now no large teaching centre without a department for skin diseases. Three journals entirely devoted to the subject appear regularly in France, two in Germany, one in Britain, Italy, America, and Austria. For twenty-five years the writer has provided an abstract of all the more important contributions bearing on cutaneous disorders, gathered from every accessible source; and from a small beginning in the Royal Public Dispensary in 1877, the number of skin outpatients seen annually in the Royal Infirmary now exceeds twelve hundred, and in a short time the new wards to be allotted to the department will provide the largest and most complete accommodation in the kingdom for a most distressing and at the same time highly curable class of diseases.

INSANITY.

By John Macpherson, M.D., F.R.C.P.Ed.

The year 1857 marks the date of the awakening of Scotland to a sense of its national responsibility towards the insane. Prior to that year, it is no great wonder that a Scottish medical journal should be somewhat barren in the production of original articles on mental disease. There are, however, between the commencement of the century and the year mentioned, some striking papers in the pages of this Journal which foreshadowed the keener interest of the future. Among these the following deserve notice:—"On the Study of Mental Pathology," by J. M. Cox; "Observations on the General Treatment of Lunatics," by Andrew Duncan, junior (whose father was instrumental in founding the Edinburgh Royal Asylum); and "The History, Nature, and Causes of Apparitions and Spectral Illusions," by R. Paterson. Notwithstanding this fact, however, the Journal kept a close eye upon the development of this special branch of medicine, and almost every event referred to in this paper is the subject of a "Critical Analysis" or "Review." After 1857, articles on insanity became more numerous. It was in the pages of the Journal that Skae first formulated his famous classification, which was so strenuously advanced in the same Journal by his pupil, Clouston. There are also important articles from the pens of such men as Laycock, Tuke, Mitchell, Wright, and many others.

The recognition of insanity as a disease requiring sympathetic treatment cannot, however, be attributed to medical knowledge, but to the gradual spread of humanitarian and benevolent ideas over Western Europe in the latter half of the eighteenth century. In a Scottish journal it is proper that some notice should be taken of the state of the insane in Scotland prior to the inculcation of the new ideas. Probably the best that can be said of it is that the lot of the mentally afflicted was not worse here than in other countries. Writing in 1681, Lord Fountainhall says: "In Scotland, having no Bedlam, we commit the better sort of mad people to the care and tameing of chirurgeons, and the inferior to the scourge." Less than a hundred years after this bloodcurdling sentence was written, a document imbued with sentiments of a different complexion was drawn up and signed by at least fifty persons in the town and neighbourhood of Montrose. It is dated March 1779, and begins as follows:—"We, the subscribers, considering the deplorable condition of many Lunatics in the town of Montrose, and the good consequences that might result from having them properly lodged and taken care of, do hereby oblige ourselves to pay, etc. etc., to be applied towards erecting a House and Garden in the Links of Montrose for the accommodation of persons disordered in mind." Thus was founded the institution which is now known as the Montrose Royal Asylum. We have no means of forming an opinion as to the manner of treatment to which the inmates were subjected in the early days of this institution, but we learn from Poole's admirable sketch of the history of the Montrose Hospital and Asylum, that "the position of the Tolbooth, in which lunatics were usually immured, was a source of daily grievance to the compassionate inhabitants of Montrose." From that statement, and from the terms just quoted of the resolution in which the townspeople bound themselves to found an hospital for the reception of lunatics, we are justified in assuming that persons actuated by similar sentiments would have taken precautions to obviate the occurrence of the grosser abuses which were everywhere associated at that time with the seclusion of the insane. To the town of Montrose is due the honour of having initiated in Scotland a separate system of dealing with the insane, and of substituting for the Tolbooth, with its horrors, a hospital for the special care and treatment of mental diseases. In 1800, Aberdeen followed the example of Montrose by opening an institution on similar lines. The Royal Edinburgh Asylum at Morningside was opened for the reception of patients on the 8th June 1809. So far back, however, as the year 1791, Dr. Andrew Duncan, senior, first called attention to the want of an asylum at Edinburgh for the protection and care of persons labouring under mental derangement, and appears, at his own expense, to have printed and widely circulated "A proposal for establishing a Lunatic Asylum in the neighbourhood of the city." We are informed on authority of Sir Arthur Mitchell, that the lunacy of Ferguson the poet first led Duncan to feel that Edinburgh ought to have an asylum for the insane. Duncan found Ferguson in a state of furious insanity, living in a house with his mother, an old widow in straitened circumstances. "Her feeble state, the situation of her house and other things, made it impossible to treat Ferguson or secure his safety while he remained at home; and, after fruitless efforts to have him provided for in a more suitable place, he was removed to the City Bedlam, where death ended his suffering on the 16th of October 1774, his last days being spent among pauper lunatics, whose situation at the time is described as deplorable, and a disgrace to the community."

The Glasgow Royal Asylum, which was opened in 1814, owes its origin to Mr. Robert M'Nair of Belvedere, at one time a merchant in Glasgow, and afterwards for many years collector of customs at Leith. Mr. M'Nair, when acting as a director of the Town's Hospital of Glasgow, had opportunities of seeing the neglected state of the insane, many of them persons of respectable rank, who, from want of proper accommodation, were placed in damp and dismal cells. He proceeded to collect subscriptions for the erection of an asylum, and principally by his own exertions obtained no less than £7000. The proposal to establish an asylum in Dundee originated with the Governors of the Royal Infirmary of that city. In 1805 they appointed a committee to obtain subscriptions, but the asylum was not opened for the reception of patients until 1820. The Perth Royal Asylum was erected by the trustees of Mr. James Murray, a native of the parish of Perth, who left money for the purpose; the accumulated funds in 1821 amounted to the sum of £32,000. The asylum was opened for the reception of patients in 1827. Twelve years later, the Crichton Royal Institution, Dumfries, was opened. It was erected and endowed by the trustees of Mr. James Crichton of Friar's Carse, who resolved that it should be "a charitable establishment, the free emoluments or profits to be derived therefrom to be employed in enlarging or further endowing the same, and that a portion of the said building shall be appropriated for the reception and proper treatment of furious, fatuous, or lunatic poor belonging to the parishes situated within the shires of Dumfries and Wigtown and Stewartry of Kirkcudbright."

Such, in a few words, is the history of the erection of the seven Royal Asylums of Scotland. Of the benefits they conferred upon the community for a period of fifty years, it would be impossible to speak adequately here. As the population of the country increased, the strain upon the resources of these institutions became taxed to the utmost, both as regards funds and accommodation. In the "Report of the Royal Commission (1857)" appointed to inquire into the state of lunatic asylums in Scotland, it is stated that the total capital expenditure made by the several chartered asylums for land, buildings, and furniture amounted in 1855 to the sum of £352,632, which, with the exception of £2000 contributed by Government to the Edinburgh Asylum, had all been derived from charitable sources. Without taking into account the cost of maintenance, which must have been great, it will be apparent that legislation was required to enlarge the provision for the insane, for of the 7403 insane persons of whom the Royal Commissioners had cognisance in 1855, only 2123 were in the chartered asylums, and these institutions, with one exception, were overcrowded. Of the remaining 5280 patients, 4075 were not reported to the Sheriff in terms of the existing law, and the description of their condition contained in the Report goes far to modify our views of the spread of humanitarianism in Scotland fifty years ago. We justly feel proud of the action of the inhabitants of Montrose in 1779, but the disclosures of the Royal Commission in 1857 are sufficient to cause humiliation. The fact seems to be that the inhabitants of the larger towns and their neighbourhoods, being perhaps wealthier or perhaps more cognisant through constant observation of the hardships endured by the insane, were the first to bestow charity. In addition to the towns already mentioned, the trustees of Gray's Hospital, Elgin, began in 1826 to raise funds for the erection of an asylum for pauper lunatics, which was opened four years later. In the Report of the Royal Commission it is stated that "great exertions were lately made to erect an asylum at Inverness, and subscriptions were obtained to the amount of £5000. In consequence, however, of a rumour that district asylums were about to be provided by Government, and in expectation that such would be the case, the money was returned to the subscribers." But while such sympathetic feelings actuated a considerable number of individuals in the larger centres to provide for the insane as generously as their experience dictated, or as the funds at their disposal would permit, similar sentiments were slow to spread to the general mass of the population. In short, charity had reached its limit, and it remained for the State as *pater patriæ* to undertake the supervision of the neglected lunatic and assist the country to make adequate provision for him. It must not be supposed that the State had not previously taken measures to legislate for the care of the insane. From the time of Robert II. many legislative Acts have been passed in Scotland dealing with the care and property of lunatics. The Act of 1815 and subsequent Acts down to the early part of the reign of Victoria, contain excellent regulations for the management of institutions, but, owing to defective supervision, they were largely inoperative.

In the same year as the "Report of the Royal Commission" was published, the Lunacy Act (Scotland, 1857) became law. Its two main features were—(1) The creation of a central Board in Edinburgh, to which was entrusted the general supervision of lunacy administration in Scotland, and (2) the establishment of district Lunacy Boards in various divisions of the country. The duty was imposed upon these district Boards of erecting asylums, when necessary, within their districts, and of managing these asylums afterwards. It is interesting to note that the policy adopted by the General Board towards the district Boards and the superintendents of asylums was from the outset characterised by an obvious desire to foster individuality of action, by directly encouraging such experiments in treatment and administration as were considered beneficial and progressive.

It is perhaps not too much to assume that the advanced position which Scottish lunacy administration is believed to occupy at the present day, is largely due to the ability of individual medical superintendents of asylums, influenced by the desire to adopt measures of reform in the treatment of the insane. Among the first duties undertaken by the General Board of Lunacy after its inception was the transfer of the large number of single patients in private dwellings, whose condition was found to be unsatisfactory, into asylums, and the gradual closing of those smaller private asylums and lunatic wards of poorhouses which were found to be unsuitable for the accommodation of the insane. But wherever the circumstances of life in private dwellings were judged to be satisfactory and suitable, the patients were allowed to remain, under the supervision of the Board. These patients formed the nucleus of the boarding-out system, which, perhaps more than any other feature in Scottish lunacy administration, has attracted interested attention from all parts of the world.

The most important result of the Act of 1857 was the provision of adequate asylum accommodation throughout the country under State supervision. The Scottish asylums began their new career in many respects under favourable auspices. In 1856, Conolly published his famous work on the non-restraint treatment of the insane, but for seventeen years previously he had practised and advocated the system. The superintendents of the Scottish chartered asylums must either have been influenced by his teaching or independently have discarded restraint as a means of treatment, for we find it recorded in the "Report of the Royal Commissioners," that "personal restraint by the application of the strait-waistcoat, or of straps, or muffs, is almost entirely banished from the chartered asylums, but we have reason to think that seclusion for long periods is frequently used."

The principle of non-restraint soon extended itself to the removal of everything which tended to give a prison character to the arrangements of asylums, and to the adoption of features which more resembled those of private houses than of large institutions. The most immediate resulting changes in this direction were—(1) The abolition of walled airing courts; (2) the disuse, where that was possible or judicious, of locked doors; (3) the practice of giving liberty on parole to selected patients; (4) the largely increased industrial occupation of the patients; and (5) the increased comfort of asylums. The last change has recently become the subject of some criticism, on the grounds of extravagance and of disproportion between the social class of the patients and their surroundings. It should, however, be borne in mind that it is the necessary and logical outcome of the whole non-restraint policy. So soon as that system had reached the stage of permitting freedom of movement to the patients within homely surroundings, the style and character of the furnishings had to be changed from the prison to the domestic type. As to the charge of extravagance, it may be pointed out that the most sumptuous asylum furnishings form a mere fraction of the cost of the construction of these institutions. The real extravagance should be looked for in the external architecture of some asylums, for stone and lime is infinitely more expensive than chairs and tables. Magnificent architectural designs are practically useless in the treatment of the insane, but books, pictures, and comfortable beds have a decided influence in promoting the peace of mind of thousands of appreciative and intelligent people who are compelled by fate to spend their lives in the seclusion of public institutions. As to the social status of the majority of the inmates of public asylums in Scotland, it must be sufficient to point out here that the term pauper lunatic is apt to be misleading. The cost to the country of each inmate of a lunatic asylum is between £30 and £40 per annum, and if it is considered how very few families in this country, who are far removed from pauperism, could afford to pay such a sum annually, it will at once be perceived that the term "pauper" is not even approximately coextensive with the term "lunatic," although unfortunately they continue to be used in conjunction as descriptive of all patients who are not wholly supported from private funds.

Hitherto I have not dealt with what in the more restricted sense of the term is called medical treatment. A large proportion of the inmates of asylums do not labour under active disease, and they are not amenable to special medical treatment. They might be described as the subjects of the psychopathic diathesis, which in the vast majority of cases is congenital. But while that is so, there are few of them who have not manifested either spontaneously, or under the influence of some indefinite exciting cause, acute manifestations of mental disturbance, generally followed by such serious consequences as mental impairment or the tendency to relapse. As a rule, it is the outbreak of these acute attacks which necessitates their being sent to asylums. It therefore became evident to some of those concerned, that the resources of asylums, however they might be advanced in respect of administrative efficiency and comfort, were unfitted to supply those conveniences for the treatment of acute attacks of mental disease for which hospitals provided with every modern appliance and skilled nursing were necessary. Towards the commencement of the last decade of the nineteenth century, a movement took place in Scotland which had for its object a reconstruction in asylum buildings, so as to provide hospital accommodation for new and acute cases, and for every kind of physical infirmity and disease to which the inmates were liable.

So rapidly did the idea spread, that very few asylums in the country are unprovided with special accommodation for new and acute cases; and it is becoming recognised that much may be done to modify acute attacks of insanity by prolonged rest in bed, individual attention to each case, and skilled nursing. So much is it felt that nursing is an all-important agency, that there are few asylums in the United Kingdom which do not annually send up candidates, after having undergone a prolonged training, for the certificate of the Medico-Psychological Association. The training of asylum nurses, which was for the first time put upon a systematic and scientific basis by the late Dr. Campbell Clark, medical superintendent of the Bothwell Asylum, is as yet in an early stage of its career. With the growth of time and experience, there is every probability that it will come to form an essential part of the education of every person who aspires to the profession of a trained nurse.

Within the four years of the present century, there have been unmistakable indications of further developments in the treatment of the insane in Scotland. These briefly are—(1) A tendency towards the abolition of all forms of seclusion either by day or by night; (2) the extended employment of female nursing in the male wards of asylums, especially in the wards occupied by sick and infirm patients; (3) the night supervision of restless, noisy, dirty, and destructive patients; (4) the treatment of acute insanity by prolonged rest in bed in hospital wards under supervision; and (5) the appearance of what has been described as the penultimate method of asylum construction, namely, the "village" asylum. This type of building may briefly be described as a collecion of "homes" or villas built aronnd a central hospital.

The Edinburgh District Asylum, now in course of erection, will be of this design; and the Aberdeen District Asylum, recently opened, affords an admirable example of the conception which aims at segregation within institutions themselves.

When we come to the question of the advancement of pure medical knowledge in the department of psychiatry during the past hundred years, we are compelled to the confession that it largely consists in the application of the discoveries made in other branches of medical science. Several workers within the specialty have added to our knowledge of brain anatomy and neuropathology. Among these may be mentioned Sir John Batty Tuke's work on the anatomy of the pia arachnoid; Dr. Bevan Lewis's extensive researches on the minute pathological anatomy of the cortex; Ferrier's earlier experiments in cerebral localisation, which were conducted at the West Riding Asylum and published in the now famous Reports of that asylum under the charge of Sir James Crichton Browne. Further results of great importance in the same field we owe to Weigert, Nisol, Ramon-y-Cajal, Golgi, and others. Perhaps the most significant of all have been the cortical localisations of Professor Flechsig of Leipzig. In clinical psychiatry by far the most epoch-making book in the English language is Prichard's treatise on "Moral Insanity," published in 1835. To Esquirol we owe the term monomania, since evolved by Magnan into progressive systematised insanity. To Esquirol also we owe the discovery of general paralysis. If

Kraepelin's recently published views on dementia præcox and mania and melancholia should prevail, as seems most probable, we shall have our preconceived opinions on a large section of mental diseases revolutionised within a few years. Only a few of the more essential clinical discoveries have been referred to, but this notice would be still more incomplete without a reference to Jacobson's (of Copenhagen) insistence upon the relationship of syphilis to general paralysis. After all that has been written, it has to be admitted that the great discovery in psychiatry—the direct pathological link between disordered bodily function and acute mental exacerbation—has yet to be made. There are indications that it may be made at no distant date, and perhaps in this country. The significance of the recent work of Mott, Ford Robertson, and Lewis Bruce points to the conclusion that the direction of fruitful advance must be through chemical pathology and bacteriology, and not through morbid anatomy. To this end nothing could be of greater service than the establishment of the Scottish Asylums Laboratory, which we owe to the wise initiative of Dr. Clouston and the generosity of the authorities of the contributing asylums.

PATHOLOGY.

By R. F. C. Leith, M.B., F.R.C.P.Ed.

Any account of the advances made by pathology and bacteriology during the last hundred years would require, if adequate, the space of two large volumes, and even though the writer is not required, fortunately, to attempt such a task, but to restrict himself to the pages of this Journal, the field to be covered is so great, that any effort in this direction must fail in at least some degree to do full justice to all the writers who have contributed to this extraordinary advancement. Bacteriology was almost unknown at the date of the birth of this Journal (1805), and it is not too much to say that pathology was represented by a limited knowledge of morbid anatomy. Observations made during life or after death (particularly the latter) were recorded with a varying care and fidelity, but the facts were mostly left to speak for themselves. Many of those early writings made up for their lack of general breadth by the fulness of their specific descriptions. What, for example, could be more delightful than the following opening words of an account of a case of hydrophobia in vol. iii., 1808? "An infantry officer about 40 years of age, of a robust temperament, a keen sportsman, of a mild but firm character, and of a very amorous complexion, but prudent, was bitten by his dog on the left hand." In those early years, Alexander Monro had begun his description of the morbid anatomy of the gullet, stomach, intestines, etc., which, when completed in 1813, were given to the world as a book on the morbid anatomy of the body. The review of notable books was a feature of this Journal in those days, as it has been ever since. Even at that time they were painstaking, critical, conscientious, and exhaustive. Monro's book was received with much commendation, but with some reservations, and the reviewer finished by saying, "We have been led to these strictures, not only by a regard for the truth, but from the hope that Dr. Monro will profit by them." Dr. Monro's book may be said to have laid the foundations of pathology in the Edinburgh Medical School, and some idea of the estimate of its time as to the importance of its teachings may be gathered from the following passage in the review:—"The information which it (morbid anatomy) furnishes is always interesting, frequently useful, and never to be neglected, but its influence on the practice of medicine is neither so direct nor so extensive as many have represented." But other great workers, notably Abercrombie and Craigie, were soon to enter the field, and by their genius and industry to extend greatly the sum of pathological knowledge. Abercrombie did more for the young science of pathology than any other man of his time. By a series of papers published round about 1820, he covered practically the whole field of morbid anatomy, and greatly extended the foundations laid down by Monro. His first writings were devoted to the spinal marrow, chronic inflammation of the brain and its membranes, and apoplexy. They contain much admirable description. They were followed by articles on the pathology of the intestinal canal, the stomach, the pancreas, the spleen, the liver, and other viscera. The morbid anatomy of these organs, so far as he himself had observed it, is well and faithfully described. It is naturally very incomplete, and much of his speculation and deduction has not stood the test of further knowledge. He speaks, for instance, of disorders of the spleen influencing the process of gastric digestion, and ascribes some forms of dyspepsia to them; but, taken as a whole, they give a wonderfully good account for the time of the morbid anatomy of these organs. The lungs also received attention from him, and in his outline of an "Inquiry on the Pathology of Consumptive Diseases" he shows how very little was known about pulmonary consumption. Bronchitis, pneumonia, indeed almost all lung inflammations, were confused with pulmonary consumption. He was inclined to restrict the latter to true ulcerative destruction of the lung, in which softening and cavity formation followed upon the deposition of tubercles. Abercrombie's writings had a great influence upon the study of pathology, and initiated a period of great activity therein. In the beginning of 1824 we find the editor of the Journal, in discussing recent progress in pulmonary disease, saying, "It is the peculiar glory of modern physic that she has availed herself of the aid of pathological anatomy to improve the art of healing, but it must be acknowledged that the treatment of consumption has derived but little advantage from this source, and we fear that inquiry would show this malady to be as rarely cured at the present moment, when pathology is zealously cultivated and well understood, as in former periods, when it consisted of fiction and hypothesis." This is a good illustration of the leading part which Edinburgh was now taking in the study of pathology. Indeed, in Abercrombie's time, and principally owing to his influence, Edinburgh was the arena of pathological disputation, just as Paris afterwards was in Laennec's time. It is both just and fitting, then, to give as we have done special attention to his articles, taking them in the order of their appearance in the Journal, but it is unadvisable to continue to do so with subsequent contributors. A review arranged chronologically irrespective of the subject-matter of the writings is less advantageous than one arranged under headings representing a few of the great divisions of pathology. Among such divisions none is more worthy of first place than that of inflammation.

There are many articles bearing more or less directly upon this subject, only some of which can be discussed. The first one of importance was by Hughes Bennett in 1844, under the title of "Inflammation as a Process of Anormal Nutrition." He divided it into the following heads:—(1) Cellular theory of nutrition; (2) the blood; (3) the capillaries; (4) the early phenomena of inflammation; (5) the essential phenomenon of inflammation; (6) the terminations of inflammation; (7) the circumstances influencing the terminations. It constitutes a painstaking and careful piece of work. Indeed, he continued for over twenty years to produce most valuable work, and was well described by Sir Andrew Clark in 1875 as the "father of Pathological Histology." He adopted the cytogenesis theory of Schleiden and Schwann, namely, that cells had their origin in a nutritive fluid or blastema. In this fluid granules first collected together and then formed a nucleus around which the cell wall appeared. He looked upon the blood as consisting of red and while cells floating in a granular fluid. The early phenomena of inflammation, namely—(1) The vital contraction and relaxation of the capillaries, and (2) an increased attraction between the corpuscles of the blood and the surrounding tissues, he considered to be merely forerunners of inflammation and not essential parts thereof, the only essential phenomenon being the "anormal exudation of liquor sanguinis." Formation of fibrin within this exudate was independent of cellular action, and the appearance of cells in the exudate was due to a new formation of those structures, a sort of crystallization, from the granular exudate which served as a blastema. A variety of products arose in this way which might become absorbed, or changed into permanent tissue or die. Pus was formed in this way. New vessels arose by a hollowing out of a space in the exudate by red blood cells, or by the independent formation of minute points which afterwards coalesced to form a tube which in turn joined itself to an old vessel.

Craigie, in discussing the pathological anatomy of the human brain and its membranes fully twenty years earlier, declared his scepticism of pus formation by the arachnoid, a view held by many at that time. His words are curious, in so far as they have been found to be true in a way that he cannot have foreseen. They are: "It has been said that the arachnoid sometimes secretes purulent matter: if it does so, it must be, I presume, in the course of those actions which take place in consequence of wounds of the head or fractures of the cranium, for I am disposed to doubt its spontaneous origin." He also controverted the view that the softening which occurred in the blood clot in the brain in apoplexy was a true suppuration. He held, and, as we now know, rightly held it to be a distinctly different process. Wharton Jones, writing in 1850 on the state of the blood and the blood vessels in inflammation ascertained by experiments, discussed very fully the physical conditions of the blood and the blood vessels, but he can hardly be said to have advanced the understanding of the real problems of inflammation. Curiously enough, however, he makes a suggestion as to the number of leucocytes in inflammation, which has since been amply extended and proved. He states that the number of leucocytes in the blood is increased in certain inflammations, particularly in pneumonia (Nasse and Popp). It is now well known that a great leucocytosis is generally a feature of this disease.

The study of inflammation was further advanced by the publication of Paget's "Lectures on Surgical Pathology" in 1853. They were discussed in the Journal in a review of over twenty pages. For the first time we may now be said to have a foreshadowing of the modern theory of inflammation as consisting of certain changes in the vessels accompanied by retrogressive and progressive changes in the tissues. Under the retrogressive changes he describes atrophy, granular and fatty degeneration (adding considerably to the previous descriptions of Hallett and Richard Quain), calcification and pigmentary degeneration. He thought that the exudate would give rise to adhesion or to pus formation according to (1) the state of the blood, (2) the seat of inflammation, (3) the severity of the process, whether acute or chronic. Under progressive changes he dealt chiefly with repair of tissues, ascribing the formation of fibrous, fatty, elastic and other tissues to the lymph. He was doubtful about how epithelium was repaired, but denied its formation from lymph or from the blood vessels. But it is in the formation of new blood vessels that he makes his strongest pronouncement, the truth of which was not to be fully verified for many years after. He held that the newly formed blood vessels of lymph, of the walls of abscesses, etc., are always formed as buds from the old blood vessels. Another vexed question also received attention from him, namely, the influence of the nervous system in inflammation. Many other contributors have dealt with the same subject. Lizars advocated its influence in 1815, so did Schroeder Van der Kolk in 1836, from experiments on animals. Wilson Philip and John Allan were both strong advocates of the power of the nervous system in inducing, maintaining, and modifying the inflammatory process. Wood also, writing in 1856, discussed the same subject. Paget was inclined to place very little importance upon nervous influence, but quoted the views of Henle and Rokitansky that it may be an affection of the nerves which causes dilatation of the blood vessels, which is pretty nearly that held at the present time. The cellular changes of inflammation still lay in the greatest obscurity. No one among the Edinburgh pathologists had had up to 1863 the courage to attack the blastema doctrine of cell formation. This was the more surprising, since by that time physiologists had largely abandoned it, and since Virchow had published his doctrine of cellular pathology in 1858. It was left to a young Edinburgh anatomist, William Turner, now the distinguished Principal of Edinburgh University, and the foremost among living anatomists, to take up the gage of battle. In his papers on "The Present Aspect of the Doctrine of Cellular Pathology," and on "The Textual Changes which occur in Inflammation of Serous Membranes," in 1863 and 1864, vols. viii. and ix., New Series, he dealt a mortal blow to the blastema theory. It is true that Rutherford Haldane had, a little earlier in the same year, broken a lance in the same cause, but it was Turner's work which gave the theory its *coup de grace*. He showed, partly by his own work, and partly by that of others, that cells existed everywhere, not only in muscles, cartilage, grey nerve matter, epithelium, bone, nerve fibres, tendons, fasciæ, ligaments, but also in the white substance of the brain, in the kidney, and, in short, in all tissues, and demonstrated by his observations on such tissues and on serous membranes when inflamed, that the same law existed for normal as for abnormal histological processes; in short, that the doctrine *omnis cellula e cellulâ* was universally true. He pointed out that the organisation of lymph was due to a proliferation of the subepithelial connective tissue cells of the part, that tubercle formations were due to changes which occurred in pre-existing cells; and though the microscopic technique of his time was not advanced enough to enable him to observe accurately all the cellular changes in inflammation, and even led him to make some erroneous deductions regarding the source of pus and the multiplication of cancer cells, still his main contention, that normal and abnormal histogenesis were alike and obeyed the same laws, was amply proved. And yet Hughes Bennett, five years later, in his atmospheric germ theory (1868), refused to accept it. He was as firm a believer as ever in the blastema theory, which he sought to re-establish by an elaborate series of investigations and experiments, in which he was ably assisted by the late Professor Rutherford, his then assistant. The latter, even if he agreed with his chief at the time, did not do so for long, as he afterwards showed that flasks filled with sterile nutritive broth and plugged with cotton-wool could be kept for an indefinite time without life appearing therein. Hughes Bennett, however, was a staunch unbeliever. "Every living thing from an egg," "Every cell from a cell," "All life from life," were in his view merely formulæ which imposed upon the understanding, checked the search after truth, and were already (1868) completely overthrown by the advance of science. The part which emigrated leucocytes play in pus production, though it had been suggested, had not yet been recognised. J. D. Goodhart, in his paper on "Artificial Tuberculosis and its relation to Cellular Pathology and the Growth of Tumours," published in the Journal in 1865, refers to it. He quotes the observations of Waller, Cohnheim, and Charlton Bastian on the emigration of leucocytes, but says "that pus corpuscles consist entirely of lymph corpuscles which have escaped from the vessels I am unable to believe," because of the formation of such large quantities within a few hours. Little further progress was made until the influence of germs in relation to suppuration and inflammation was recognised. Lister's brilliant deduction, founded upon Pasteur's researches in fermentation, that suppuration in wounds was caused by germs entering them from without, had an immense influence upon the whole subject of inflammation. He proved his position by a series of patient, skilful, and conclusive experiments (1875–78), and thereby laid the foundations of the modern theory and practice of antiseptic surgery. In 1881, Ogston showed that cocci both in groups (staphylococci) and in chains (streptococci) were to be found in pus of acute suppurations; and further studies by Cartwright Wood and Ross in 1891, and by others too numerous to mention, referred to in various ways in the pages of this Journal, have explained the emigration of leucocytes from the vessels, their accumulation at the seat of irritation, their functions as phagocytes and as scavengers, and their ultimate disappearance by absorption or by disintegration or by becoming pus corpuscles; the cause and character of the exudate, its bactericidal power and other uses: the nature of the degenerative processes which occur in the fixed tissues, and how they are caused chiefly by the toxins produced by the germs, but partly by the changes in the blood and lymph streams; the formative changes which may accompany or follow thereon, and which underlie the process of repair. Hamilton in 1881 sought to show that this process of repair was hastened by grafting a sponge in the floor of a wound. Hall wrote on the same subject in 1883, while Porritt in 1881 discoursed on the organisation of porous substances, blood clot, etc. We now know that all such foreign bodies are really hindrances to the process of repair, and that the only aid required is the protection of the healing surface from germs.

The origin of tumours.—The blastema theory of the origin of the cells of a tumour was completely overthrown by Turner. It is true that he, Haldane, and others, thought that a sarcoma, for instance, may be added to by a transformation of muscle cells into sarcoma cells. It was presently shown that this did not occur in the way described by them, and that once a tumour, whether simple or malignant, arises, all new cells spring from the pre-existing cells of the tumour. The origin of the first tumour cells still remained a mystery. Woodhead, in a paper on "The Etiology of Tumours," 1881, sought to show that it was all a question of nutrition, that so long as the nutrition remained normal the cells of tissues obeyed the physiological laws of multiplication, but when there arose a demand upon the resources of the tissues in excess of their nutritive supply, an abnormal development might occur, the result of which was tumour formation. This idea was also brought out in his and Cartwright Wood's later paper on "The Physiology of the Cell considered in relation to its Pathology." Later still, in 1900, Bellingham Smith and Washbourn, in a paper entitled "The Infectivity of Malignant Growths," pointed out the deficiency of Cohnheim's embryonal theory, of the irritation theory, and supported the infective or inoculation theory by citing cases of the accidental inoculation of cancer and its successful experimental implantation. The most recent theory of all, the "gametoid," as it has been called, put forward by Farmer and his collaborateurs, and discussed by Bashford and Murray and others, was fully noticed in a leader in the Journal in the spring of the present year.

Diseases of the blood.—Among the earliest papers on the blood was that by Davy in 1828, which dealt chiefly with its coagulation. In October 1845, Hughes Bennett discovered leucocythaemia. He described a case of "hypertrophy of the spleen and liver in which death took place from suppuration of the blood." Craigie described a similar case about the same time. Only a month later, Virchow gave an account of another, under the title of "white blood." He noted the association of enlargement of the spleen, epistaxis and a peculiar richness of the blood in leucocytes. The observations in these cases were made post-mortem. Both Bennett and Virchow were able presently to supplement their first cases, and the former introduced the name Leucocythaemia and the latter Leukaemia for the disease. Bennett published a brochure on the subject in 1852. He showed how cases could be diagnosed with ease by placing a drop of fresh blood under the microscope. Virchow's second case showed a large excess of leucocytes in the blood, associated with enlargement of the lymphatic glands and but little enlargement of the spleen. Later, he distinguished two forms of the disease—a *splenic* form, in which the excess of leucocytes came from the enlarged spleen, a *splenæmia;* and a *lymphatic* form, in which they came from the lymphatic glands, a *lymphæmia.* It was many years later, indeed not much more than twenty years ago, before much further progress was made. The researches of Ehrlich (1879 to 1891) on the characters of the cells in the blood and their reactions to various aniline dyes, greatly stimulated other workers, and led to a careful study of the characters of the leucocytes in this disease by Muir, Hayem, Kanthack, and others, which gradually brought a knowledge of the disease up to its present state. Other pathological states of the blood began to receive notice at a very early date. Primary anæmias and the secondary anæmias of general diseases, such as tubercle and cancer, were noticed in a review of Tholazan's work in 1853. Several cases of pernicious anæmia were communicated by Byrom Bramwell in 1877, in which he drew attention to other changes in the blood than those of altered shape and size of the red cells well known at that time. For instance, he described and figured nucleated red cells for the first time. He verified Cohnheim's statement that the marrow of the long bones was transformed into a red lymphoid-looking tissue, and agreed with Eichhorst's observation that the deeper colour often shown by the red cells in this disease was of great diagnostic importance. Other observers, *e.g.*, Macphail, Colman, communicated fresh cases, chiefly, however, from the therapeutic side, supporting Bramwell's experience that arsenic was a valuable drug in these cases.

In 1895, Stockman gave a valuable summary of sixty-three cases of chlorosis. An apparently new disease of the blood was described by Bramwell in 1902, under the title of "Chloroma, and Three Cases of Lymphatic Leukæmia." He and Melville Dunlop pointed out how cases of chloroma may present clinically symptoms of leukæmia. The name is given because of the peculiar greenish pigmentation of the cells. The disease is probably a round-celled sarcoma which occurs with special frequency in the bones of the head, and secondarily in other parts of the body.

Diseases of the nervous system.—The early observations of Monro, Abercrombie, and Craigie have already been mentioned. Hughes Bennett in 1842, under the title of "Pathological and Histological Researches on Inflammation of the Nervous Centres," gave an elaborate description of cerebral and spinal softenings, in which he distinguished two forms—an inflammatory and a non-inflammatory. For many years after there was a singular dearth of articles dealing with nervous diseases from the side of pathology, relieved, it is true, by Alexander Morison in 1878, on "Diseases of the Brain and Glycosuria," and by Bramwell in 1879, etc., on "Intracranial Tumours": and the march of this particular branch is noted chiefly in the reviews of works on nervous diseases, *e.g.*, in 1881, Bramwell on "Intracranial Tumours and Locomotor Ataxia"; Grainger Stewart on "Paralysis of the Hands and Feet from Diseases of the Nerves"; in 1882, Bramwell on "Spinal Cord Diseases"; Ross, Hammond, and Buzzard on "Diseases of the Nervous System"; and in 1887, Gowers on the same subject. A few years later a wealth of matter appeared, *e.g.*, Wyllie on "The Disorders of Speech" (1891 to 1894); Middlemas and Ford Robertson on "Pathology of the Nervous System in relation to Mental Diseases" (1894 to 1896); R. A. Fleming on "Ascending Degeneration in Mixed Nerves," and "The Effect of Ascending Degeneration on the Nerve Cells of the Ganglia on the Posterior Nerve Roots and the Anterior Cornua of the Cord," in 1897; Bramwell on "Aphasia," and Bevan Lewis on "The Structure of the First or Outermost Layer of the Cerebral Cortex," in the same year. It is impossible to refer to these in detail, but Bevan Lewis's results may be shortly noticed in passing. He holds that the superficial cortex of the brain is an enormous field, in which the sensory units are brought into close contiguity with the terminal dendrites of the motor pyramidal cells. Middlemass and Robertson, in their careful descriptions of the shape and size of the cranium, the thickness of its bones, the morbid conditions of the dura and the arachnoid, the changes in the weight, size, and specific gravity of the brain, added greatly to our knowledge of the morbid anatomy of mental disease. The subject was continued by Ford Robertson in another paper in 1896 on "The Morbid Conditions of the Intracranial Blood Vessels."

Pulmonary tuberculosis.—This subject has greatly exercised men's minds from the time of Sylvius to the present day. Abercrombie's views about 1820 have already been referred to. The term phthisis had by this time come to be mainly restricted to wasting disease in which the lungs were occupied by tuberculous matter and the changes consequent thereon. It was also recognised that pulmonary consumption was a general malady in which the lung changes were the most conspicuous morbid lesions. But there was dubiety as to what ought to be called tubercle, as to its genesis and as to the relations of the different forms of tubercle to one another. It was variously held to be a degraded condition of the nutritive material of the body, a morbid deposit from the blood, a growth, a retrograde change in pre-existing structures. Its relation to inflammation in particular was the subject of much discussion. Christison, writing in the forties, recorded a case of empyema which in his view illustrated the connection between tuberculous deposition and chronic inflammation. Two views were prominently advocated by different authorities—(1) That inflammation followed and did not precede tubercle; (2) that tubercle followed upon inflammation, not, however, upon all the common forms of inflammation, but upon some special form or forms with whose causation it was in some way connected. Our modern notions of tubercle date from Laennec. He taught that tubercle was a specific new growth, at first grey, afterwards opaque, and then caseous, and that this was always the succession. By the early sixties it was beginning to be grasped that a primary tubercle gave rise to secondary tubercles by absorption of part of the original focus, and to be suggested that the primary tubercle itself might come in the same way from elsewhere, that it was indeed an infective disease. Animal experimentation afforded the means by which the next striking advances were made. Following quickly upon Villemin's experiments in 1865, a series of researches was undertaken in Germany, France, and England. Burdon Sanderson's in 1869 were among the most important of these. He made a shrewd guess when he suggested that the nature of the infective material of tubercle was a minute solid substance. He held that tubercle was an infective disease as much as smallpox, scarlet fever, glanders, etc., but with this difference, that its infective material was more common and more widely spread than that of these other diseases. He criticised Laennec's specificity of tubercle and Lebert's histology of the tubercle growth much too rigidly, but was not far out in his summing up, in which he said that three agencies were at work in the development of tubercle in man—(1) susceptibility, (2) irritation, (3) infection. He held that a lymphoid tissue was first formed as the result of irritation of certain tissues in a susceptible individual, and that the infection of tubercle afterwards settled in this focus. He pointed out that tubercle spread from its primary site first by the lymphatics and later by the blood vessels, a conclusion which was supported by J. D. Goodhart a little later (1865) in a paper on "Artificial Tuberculosis and its relation to Cellular Pathology and the Growth of Tumours." Sanderson showed also that the whitish-yellow softening which occurred in tubercles was not a process of suppuration, but was a true form of degeneration or slow necrosis of cells crowded together, brought about by compression of the neighbouring blood vessels. This we now know to be part, though not the chief part, of the true explanation of caseation. The view of Laennec that the miliary white and yellow tubercles were all manifestations of the same disease, was now held by many to be correct, though there was not the same agreement that this was always the succession. D. J. Hamilton, now the distinguished Professor of Pathology in Aberdeen University, stoutly maintained a different view (vol. xxiii., New Series, 1877). So many products, he says, of entirely different origin have been called tuberculous, that one is puzzled to know what the name signifies, where we are to begin and where to end in calling a new formation "tubercle." His conclusions are interesting. They are—(1) A certain number of so-called instances of miliary tubercle in children are tuberculous, but by no means all; (2) true tubercle is a disease which affects adults quite as frequently as children, if not more so. In his view the so-called phthisis of the kidney, testicle, and intestine were not tuberculous, but merely corresponded to the caseous catarrh and phthisis of the lung. Koch's epoch-making discovery of the tubercle bacillus in 1882 put an end to all doubt. It was soon made clear what was tubercle and what was not; and the identity of lupus, white swelling of the joints, scrofulous glands, pulmonary consumption, renal, testicular, and other forms of tubercle, became established beyond the possibility of cavil. For some time after Koch's discovery nearly every medical journal contained some reference to the bacillus, and it is possible to refer here only to a few of those which appeared in this Journal. Philip in 1886 communicated an improved method for the detection of the bacillus in the sputum, in which a large quantity of sputum (twelve to twenty-four hours' output) was incubated at body temperature, and the precipitate examined. Hunter Mackenzie a little earlier wrote on the very high diagnostic but indeterminate prognostic value of the presence of the bacillus in the sputum. Troup a little later wrote to the same effect. Information about the bacillus rapidly accumulated, and has continued to do so until it may now be said that we know nearly everything about its life within the body and about its artificial laboratory existence, but very little about its natural extra-corporal life. The relation of human to animal tuberculosis was the subject of an able and stirring paper to the Journal by Walley in 1888, in which he discussed the animals affected by tubercle, the method of propagation, the organs and tissues attacked, and laid down certain data for agitation among medical and veterinary men, and recommended memorialising the Privy Council in order to obtain the recognition of tubercle as a contagious disease, the condemnation of affected flesh, and the inspection of slaughter-houses. This paper had an immediate effect, as the Medico-Chirurgical Society, before whom it was read, appointed a committee to inquire into pleuro-pneumonia and tubercle, and report to the Privy Council. Walley's contentions have all been secured since then, although Koch's celebrated pronouncement at the Tuberculosis Congress in London in 1902 has done much to upset men's minds as to their necessity. Research is being actively prosecuted at the present time as to the truth of Koch's dictum that human tuberculosis is not transmissible to animals, nor that of animals to man, and the question is likely to be authoritatively settled ere long; but enough evidence has already appeared, some of which has been referred to in the "Abstracts" of this Journal, to lead us to believe that Koch's dictum will be partially or even entirely upset.

The relation of micro-organisms to disease.—As early as 1842, John Goodsir described sarcinæ in the acid contents of dilated stomachs. In 1849 it is shortly mentioned that Dr. Cowdell had suggested that cholera might be due to the presence of fungi in the body. Others said these fungi were present in the stools; but a committee appointed by the Royal College of Physicians decided that the whole theory of the disease is erroneous so far as it is based upon the bodies in question. Some years later, Hallier suggested that a micrococcus or bacterium was the cause of most specific infective diseases. It is true that Hughes Bennett lent his powerful influence in a contrary direction, and sought to show in 1868, in a paper on "The Atmospheric Germ Theory," that the organisms found in organic fluids during fermentation and putrefaction originated in oleo-albuminous molecules within the fluid, and subsequently floated to the surface to form the pellicle or proliferous matter. "There, under the influence of certain conditions, such as temperature, light, chemical exchanges, density, pressure and composition of atmospheric air and of the fluid, etc., the molecules, by their coalescence, produce the lower forms of vegetable and animal life."[1] Little progress was, however, made, and the study of bacteria remained mostly in the hands of the botanists, until the genius of Pasteur furnished the key to the whole position by his investigations on fermentation (1860 to 1876). Lister, accepting the truth of Pasteur's results, showed the relation of germs to suppuration in wounds. Davaine's work on anthrax had almost conclusively proved that the anthrax bacillus was the cause of this dread disease, and Koch added the missing link in 1878. His discovery of the tubercle bacillus, and his demonstration of the uses of gelatin as a culture medium, gave great stimulus to the general study of germs in relation to disease, which quickly began to bear rich fruit. Hansen discovered the leprosy bacillus in 1871, Bollinger the actinomyces in 1877, Neisser the gonococcus in 1879, Ogston the staphylococcus and streptococcus in relation to acute suppurations in 1881, Eberth the typhoid bacillus in 1880–81, Koch the tubercle bacillus in 1882, Löffler and Schutz the glanders bacillus in 1882, Koch the cholera bacillus in 1883, Friedländer a pneumonia bacillus in 1882–83, Fränkel the pneumococcus in 1886, Klebs and Löffler the diphtheria bacillus in 1883–84, Fehleisen the *Streptococcus erysipelatus* in 1884, Nicolaier the tetanus bacillus in 1885, Pfeiffer and others the influenza bacillus in 1892, and Kitasato and Yersin the plague bacillus in 1894. These discoveries were noted from time to time in the Journal by papers and reviews. Thus Afanassiew wrote upon Gram's method of staining the micro-organisms in pneumonia and tubercle in 1885; Klein's and Crookshank's books on germs in relation to disease, and Watson Cheyne's recent essays by various authors on the same subject, were reviewed in 1885 and 1886, the last-named giving an account also of Pasteur's researches on vaccination for rabies. An important work by Weichselbaum on the etiology and pathological anatomy of acute inflammations of the lung was freely translated by Niven of Manchester in 1886, in which our present views are very well foreshadowed. It was shown therein that the pneumonic virus is no unity, because inflammations of the lung can be caused by different kinds of bacteria: that the distinction of lobar and lobular pneumonia rested upon an anatomical but upon no etiological basis: that Fränkel's organism was by far the most frequent cause of lung inflammations, and that cold could only act as a predisposing cause. Tropical diseases have received great attention, and rapid advances have been made in their study within recent years. These advances have been noticed at some length in the "Abstracts" of this Journal. From the discovery of the malarial parasite by Laveran in 1880, to the knowledge of its asexual and sexual development gained by the labours of Manson, Ross, and others, the progress made in its study has been carefully noted. The labours of Kitasato, Yersin, Hankin and Leumann, Gordon, Palmette, Borel, but most of all of Haffkin, in the study of plague, have been duly referred to. Lastly, the discoveries of Bruce, Castellani, Cuthbert Christy, and others, of the relation of the trypanosoma to sleeping sickness, have been discussed. Schaudinn's demonstration of the remarkable changes observed in certain trypanosomes have also been noticed. Many other papers, *e.g.*, Lewis's "Typhoid Bacilluria," A. Balfour's "Researches on the Bacteriology of Typhus Fever," deserve notice, but our space will permit of no more than a short reference to the great subject of immunity. Special papers bearing on some of its aspects have appeared in the Journal. Washbourn in 1898 gave an account of the *rationale* and value of both the diphtheria and the tetanus antitoxin, and discussed also the antistreptococcic and antipneumonic serums. The most general account of all, giving a bird's-eye view of the whole subject, appeared only last year, and is from the pen of Anne M. Watson. It is entitled "The Modern Theories of Immunity," and is an able digest of the lectures by Annet, Welch, and Grünbaum, which had appeared some months earlier in the *British Medical Journal*.

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[1] It is interesting to note that there is a tendency at the present time on the part of both biologists and physicists to resuscitate the old doctrine of spontaneous generation of life, not, it is true, in the form here indicated, but as a much more minute and gradual evolution.

And now this review of the advances made by pathology and bacteriology, as exemplified by the pages of the *Edinburgh Medical Journal* during the last hundred years, must close; but short and imperfect though it be, and dealing as it does with only a few of the divisions of these two great subjects, it still affords sufficient evidence of a record of achievement of which any journal might well be proud.

PHYSIOLOGY.

By T. H. Milroy, M.D.

During the early part of the nineteenth century there was much activity shown in the elucidation of physiological problems, and this activity was by no means confined to one country, for in England, France, and Germany there were many workers devoting all their energies to work of this kind. The *Edinburgh Medical and Surgical Journal* contributed in no small degree to the spread of the new knowledge, partly by means of elaborate reviews and abstracts of classical papers, and partly by means of original papers. It was but natural that an Edinburgh medical journal should reflect, in some degree at least, the general excellence of the literary work at that time being sent out from the capital of Scotland, and a perusal of the early volumes of this Journal soon opens the eyes of the reader, if they require that opening, to the existence at that time in Edinburgh of as strong a group of medical scientific writers as she has at any time in her history possessed.

In the volume which appeared in 1819 there is a most excellent, if rather too trenchant, critical review of Magendie's "Précis Elementaire de Physiologie." The reviewer has entered upon his task with the evident desire to analyse critically every section of the book. There is no slurring of the work of reviewing here. More delight is evidently taken in showing where the author, in the reviewer's opinion, has gone wrong than in emphasising what is original and praiseworthy. In the earlier part of the work, Magendie elaborates Bichat's systems of the animal body, giving an exceedingly good working classification. Magendie's adoption of the Baconian method gives the Edinburgh reviewer an opportunity of having a fling at what he terms that "most pernicious method." Throughout the entire work there are signs of the author's great ingenuity in applying simple methods of demonstrating physiological facts, *e.g.*, the image on the retinæ of albinos (rabbits, pigeons, mice), the employment of vibrating reeds to demonstrate the nature of vocal cord movements, methods to show the absorption of fluids from the stomach after ligature of the pylorus. Magendie's materialistic views with regard to the localisation of the intellectual functions in the cerebrum meets with the most contemptuous treatment by the reviewer.

It is the same reviewer, evidently, who discusses Lawrence's well-known lectures on physiology, where materialistic views of the most pronounced character were expressed to an audience of students. At this period there was evidently a strong feeling abroad as to the danger of expressing such views, and the reviewer exercises all his powers in trying to show the futility of Lawrence's attempts to prove that matter (cerebral) was capable of thinking. I may be permitted to quote from one of the characteristic passages where the reviewer brings forward the old argument against a localisation of the higher faculties in the cerebrum: "If memory be merely an impression made upon a material organ, in what manner is the impression transmitted? Does an old man relate the tales of his early days—then how has he retained them? There is not in his body a single particle that was present when the incident occurred (?) upon which he dilates with such complaisant garrulity. Has one series of particles, as they departed, related the tale to those who came to occupy their place, as a sentinel on quitting his post repeats his instructions to him who relieves him? . . . Does the new matter that is added to the body of a Gregory undergo from time to time a course of instruction in physic? Was the nutriment of Porson regularly drilled in Greek? Do the particles of Wilberforce relate to one another the tale of Afric's wrongs? Did the atoms of Bonaparte urge on the conscript atoms in their wild career of ruthless ambition?" The influence of Dugald Stewart is seen in all the reviewer's philosophic arguments.

A most interesting contribution to our knowledge of the functions of the spleen was made by Thomas Hodgkin in 1822. He shows from the situation and structure of the organ, as well as from his pathological and experimental observations, that it must act as a blood reservoir to relieve overfilling of the vessels of the abdominal viscera. The writer evidently carried out a minimal amount of experimental work, and seems to have relied mainly on the work of others.

A keen, if rather wordy, warfare was waged during the year 1822 over the subject of the function of the vagi in digestion, and those who took the most active part in it were Broughton and Brodie on the one side, and Philip and Hastings on the other. The last-mentioned collaborateurs believed that after section of the vagi, digestion ceased, but that the normal process may be again called forth by galvanic stimulation of the cut nerves. Broughton and Brodie, on the other hand, were unable to discover any direct effect on digestion from the section of the nerves either in the neck or close to the stomach. Philip objected to their experiments, because care was not taken to keep the cut ends apart, and, on further investigation, Broughton and Brodie found that digestion was interfered with after section of the vagi if contact between the cut ends was carefully avoided, and that galvanic stimulation of the distal end aided the digestive process. In a later volume, there is a short paper on an experiment to determine whether the blood in the veins is moved by a suction power in the heart, but the experiment does no more than prove that there is a *vis a tergo* in the veins. There is no exclusion, as the writer desires to prove, of the suction power of the heart.

John Reid's papers on "The Injection of the Vessels of the Fœtus" are of special interest with regard to the path taken by the blood in the fœtus from the superior and inferior cavæ through the right auricle. Great care was taken in the injections to arrive at accurate results as to the degree of intermixture of the blood from the superior and inferior cavæ in the auricle. Another excellent example of Reid's careful experimental work is to be seen in vol. xlix., where the functions of the glosso-pharyngeal, vagus, and spinal accessory are investigated. He proved the sensory nature of the glosso-pharyngeal fibres, the motor character of the pharyngeal branches of the vagus, and gave in addition an excellent account of the nervous mechanism of deglutition. His observations on the cardiac branches of the vagi were much vitiated, from the fact that he confined himself to a study of the effects of section alone, never investigating the influence of electrical stimulation of the distal or proximal ends upon the cardiac beat. Blake's observations on the physiological effects of various agents introduced into the circulation, as indicated by the hæmodynamometer, are practically of no value, as his method of noting the pressure alterations was a very bad one, and the quantities of the drugs such as to vitiate all his results.

Gulliver made some observations on the condition of the blood and muscles in animals killed while hunting, and, in contradiction of Hunter's observations, affirmed that stiffening of the muscles took place rapidly after death, and that the blood was coagulated.

In vol. lxxii. (1849) there is a most excellent abstract of an epoch-making memoir presented by de Rossignol to the Royal Academy of Medicine of Belgium. It gives a most complete account of the method of subdivision of the air passages, introducing for the first time the terms alveoli and infundibula, and there is also given a detailed description of the vascular supply, bronchial and pulmonary. In the same volume there is an abstract of a memoir presented by Pascal, the subject also being the minute structure of the lung, but it is by no means so accurate as the preceding work, and certainly did not advance the knowledge of that time on the structure of the lungs.

Lee, in the *Philosophical Transactions* of this year, published a paper on the nerves and ganglia of the heart, which seems to have attracted a good deal of attention, but his results are simply a confirmation of those of Scarpa with regard to the position of nerve plexuses in the ventricles, and the large number of ganglia on their course. The abstract in this Journal gives a good, if brief, account of the writer's work.

During the year 1850, and for some time afterwards, Wharton Jones was actively engaged in microscopical research, and one of his papers, "The Blood Corpuscle considered in its different

Phases of Development in the Animal Series," was abstracted freely for the Journal. The writer describes with much detail the appearances presented by the blood corpuscles in Crustacea, Insecta, and Annelida, and then very briefly compares their morphological characters with those of vertebrate blood corpuscles. In the light of our modern knowledge, the descriptions, although in many points showing keen observation on the part of the writer, are very incomplete.

In the next volume of the Journal, Handfield Jones has a paper on the secretory apparatus of the liver, which was studied in sections prepared from the liver of the rabbit after ligature of the common bile duct. The liver was examined at different periods after ligaturing the duct (one to four days). He found that the liver was beset on the surface and throughout its substance with numerous spots of deep yellow colour, produced by bile accumulation. Under the microscope, these were found to be situated in the peripheral parts of the lobule, never throughout the whole lobule. From the fact that he could not see a distended plexus of ducts, he believed that any signs of such a network, as described by others, was due to a passage of bile into the blood capillaries. In this opinion the author was supported by Bowman. Wharton Jones also about this time published a paper on the same subject, mainly remarkable for the accuracy of the observations, when we remember that no special histological method suitable for bringing out bile canaliculi was employed. At this time also Retzius published a most elaborate paper on the general structure of the liver in different animals — dog, cat, rabbit, squirrel, and pig—in addition to a careful description of the human liver. This investigation laid special stress upon the lobule formation in the different animals. In the later volume (lxxvi.) an abstract is given of Waller's classical paper on the effects of section of the glosso-pharyngeal and hypoglossal nerves in the frog. He describes fairly fully the signs of degeneration in myelin sheath and axis cylinder, and gives the dates when the different degenerative changes are visible. The paper is also valuable as giving a fairly complete list of the older papers on the same subject.

An article by Barry, excerpted from the *Philosophical Magazine* of August 1852, will only cause amusement to the modern reader, although the author took himself most seriously. His paper bears the title of "The Spiral Structure of Muscle and Cilia," and in it his views with regard to the changes which the spiral fibres undergo during contraction and relaxation are enunciated with great earnestness. Even in his own time Barry's universal spiral structure of the organic world seems to have been a subject for amused comment, Bowman in *Todd's Cyclopædia* especially treating this paper in very cavalier fashion. The author asks the reader the question, Who can know the structure of muscle if he does not, seeing that he has worked so long at the subject? There has been at different periods much polemic discussion on the subject of striped muscle, and certainly no writer has upheld his theory with greater earnestness than Barry. In the same volume there is the interesting and classical article on the rhythmical contractility of the veins of the bat's wing as a means of accelerating the blood flow in a part far removed from cardiac influence. This article is well worthy of perusual by physiologists as an example of careful observation arriving at results of the greatest value. The author refers to the difference between the tonicity of the arteries and the rhythmicality of the contractions of the veins. He also recognised the presence and explained the functions of the valves. He noticed that the number of the rhythmical contractions was about ten per minute.

There is a curious, if somewhat gruesome, article by Professor Kölliker in vol. lxxx. Virchow and he investigated the physiological condition of various tissues of the body of a criminal who had been decapitated a very short time before. Thirty-five minutes after the decapitation, Kölliker and Virchow had the body conveyed over to the Anatomical Institute, and there they investigated the effect of electrical stimulation of brain, spinal cord, nerves, striped and unstriped muscle. One interesting point brought out was that the unstriated muscle of the splenic capsule and trabeculae did not react to stimuli at a time when plain muscle elsewhere distinctly contracted. The gradual loss of excitability of the nerves and nerve centres was as carefully studied as could be done under the circumstances.

Tomes and de Morgan's paper in this volume has been printed *in extenso* from the *Philosophical Transactions* for 1853, and is, of course, one of the classical papers on the minute structure of bone. They describe most minutely the appearances presented by adult and growing bone. Unlike Sharpey, however, they held that the groundwork of bone was granular and not fibrous. At a somewhat later period the influence of German physiological work began to make itself felt. Professors M'Kendrick and Stirling in their contributions showed unmistakably that a new era had begun in English physiology. The influence of Helmholtz is shown in the former's writings, and that of Ludwig in the work of the latter.

M'Vicar's articles are impossible to understand. Surely never was such an elaborate structure founded upon such a weak groundwork. With a minimal knowledge of chemistry and a great tendency to hazy theorising, the author built up an amazing theory to explain the function of the liver. Without the liver we should, it appears, become incrusted with vegetable cellulose, and the author takes infinite pains to explain how by means of the liver cells we are saved literally from vegetating.

Up to this period there have been but few papers dealing with chemical alterations in the tissues during disease, as chemical analytical methods were not at this time much employed in clinical work. One of the first papers with a distinctly chemical bearing was that by Marcet on the nutrition of muscular and pulmonary tissue in health and in consumption, but, unfortunately, practically no description of methods is given, and so it is impossible to judge of the accuracy of the results. His two main conclusions were, first, that the nature of the chemical changes which take place within muscles in consumption is the same as in health, but these changes are lessened in degree, the amount of nutritive material supplied being diminished. Moreover, there appears to be in muscular tissue in phthisis a beginning of that separation of water from the solids which, under other circumstances, only occurs some time after death. His second main conclusion was that muscular tissue in consumption contains more soda and chlorine than in health.

Pettigrew's lectures on "The Physiology of the Circulation in Plants, in the Lower Animals, and in Man," attracted much attention at the time of their delivery. These lectures, eleven in number, were delivered before the Royal College of Surgeons, Edinburgh, and were distinguished by the extensive knowledge shown by the lecturer. They will even at the present day well repay perusal.

Liebermann in Vienna about this time advanced the view that the force of the blood acting through the lung capillaries caused dilatation of the air vesicles, and Hoggan, in a short but interesting article, claims priority by stating that he had advanced the same explanation some three or four years earlier.

Nicholson's paper is one which does not require any reference, as it is simply a statement of his own opinions on the subject of expenditure of energy in generative acts.

M'Kendrick in this volume (vol. xviii.) takes up again the subject of hearing, and gives a short but clear account of the physiological analysis of sound waves, of the influence of overtones on timbre, and on the methods of demonstrating those harmonics.

We have now come to a period when the work becomes of the more modern experimental or chemical type. Physiologists had commenced to use physical and chemical methods for the elucidation of their problems. This was largely due to the influence of the German physiological schools of Berlin and Leipzig. Noël Paton, in a short paper in vol. xxxiv., emphasises the necessity for a systematic examination of the urine for proteids, and compares Esbach's and the gravimetric methods for quantitative estimations.

A paper that should be read by all students of histology is that by Gulland on "The Function of the Tonsils." Their structure is described with great clearness, and from their histological characters the writer draws his conclusions as to their functions. The way in which the leucocytes are formed in the lymphoid accumulations, the rôle of the free wandering leucocytes, and the conditions under which the activity of the tonsils as protective organs may be interfered with, are all discussed by one who has had many opportunities of careful study of lymphoid tissue. Aitchison Robertson, in vol. xl., gives a description of the changes which cane sugar undergoes in the alimentary canal. He pointed out in the first place that saliva has no inverting action on cane sugar, while gastric juice produces more inversion than acid of equivalent strength. Complete inversion can take place in the small intestine by means of the action of the inverting ferment. The work is of great practical value in giving the time which is required to invert a fixed quantity of cane sugar in stomach and small intestine respectively. In a later paper the same author discusses the question of the effect of pathological conditions of the alimentary tract upon digestion of cane sugar, and brings out the interesting point that invert sugar is much more easily absorbed than cane sugar, and hence might be used in cases when the latter might cause alimentary disturbance.

Noël Paton in the same volume gives a short description of the general views held with regard to the rôle of the liver in carbohydrate metabolism. This is no place to enter into a discussion of these views and the conflicting ones of Pavy. As a presentation of the views held by the majority of physiological chemists, this paper leaves little to be desired. The question as to the active factor in the transformation of glycogen into glucose, whether it be the active cell protoplasm or a ferment, is one which requires further evidence before final settlement. To Dr. Pavy all credit is due for emphasising the carbohydrate radicle in the proteid, and also for insisting upon direct evidence for or against the transformation of glycogen into glucose. It is impossible to arrive at present at any exact estimation of the quantitative changes which the carbohydrates undergo in the liver.

The source of muscular energy has always been a problem that has attracted the attention of physiologists, and for its elucidation many classical researches have been carried out, the work of Pettenkofer and Voit and Fick and Wislicenus leading people to believe that the carbohydrates are the source of the energy, while the work of Pflüger and his pupils has emphasised the rôle of the proteids as being the more important in this respect. Noël Paton sums up very fairly the facts in support of the two views, and draws conclusions which will be agreed upon by most physiologists. I may be permitted to quote his own words. The great use of the proteids in training is not that "they alone are the sources of muscular energy, but because they are essential for the growth of living muscle substance which has the power of liberating that energy. The greater the amount of proteid material we can supply to the active muscles, the greater is their chance of growth, and the greater the chance of increasing the energy-liberating apparatus of the body."

The nature of the impulse which passes along the axon from cell body to the organ into which the discharge is to take place, has often been spoken of as analogous to an electrical one, but although there are electrical variations accompanying a nerve impulse, it is by no means proved that the two are identical. Althaus's paper is purely theoretical. It is not founded upon sufficient experimental evidence.

All who are interested in the application of exact scientific methods to the study of medicine, are much indebted to Dr. George Oliver for the admirable instruments which he has devised for the study of blood pressure variations in the human being, and his papers in a recent volume of this Journal should be carefully studied by all medical men.

In conclusion, for the student of physiology just as much as for the student of general medicine, there is much to be learned from a careful perusal of the physiological articles in the volumes of the *Edinburgh Medical Journal* published during the last century. There is a record in these pages of much able and patient work by men who have done much to place Edinburgh in the position it at present occupies as a great medical centre.

ANATOMY.

By Richard J. A. Berry, M.D., F.R.C.S. Ed.

In view of the opinion so frequently expressed, that the science of human anatomy reached finality many generations ago, and that further progress in this direction is to-day an impossibility, it may not be amiss to take the opportunity afforded by the Centenary issue of this Journal to review the facts themselves, and to see what degree of truth, or the reverse, there is in the above-mentioned currently expressed opinion. It may be stated at once that all those who believe human anatomy to be an effete science are not conversant with the facts of the case. A mere perusal of the number, and an examination of the nature, of the anatomical works which have appeared in the Journal during its century of existence, will afford much food for thought to those holding these or other erroneous views as to the progress of anatomy, if indeed it does not actually convince the sceptic as to the worthlessness of the view. It may be readily enough admitted that anatomical science, in common with all other sciences, has occasionally marked time, sometimes for rather too prolonged periods, but it is very far from the truth to suppose that modern human anatomy has come to a complete standstill. She too has played, and is playing, her part in the revolution of knowledge by research.

Probably one of the best and most convincing indications of the progress of any particular branch of medicine in any particular period of time is afforded by its text-books. The text-book, to be successful, must be up to date; consequently individual research, if worth the paper it is written upon, quickly finds itself incorporated in the text-book, and hence the text-book is or should be the mirror of scientific truth. If anatomical science has made no progress, how comes it that many of the anatomical text-books reviewed by this Journal in its century of existence, such as Monro's "Anatomy of the Human Bones," Shaw's "Manual for the Student of Anatomy," Fyfe's "Compendium of Anatomy"—a work which passed through nine editions—are not now in daily usage? They can be purchased for sixpence on a second-hand bookstall, and yet the modern student prefers to spend pounds on some more modern work. Facts like these should go far to remove the modern erroneous conception of the want of progress of human anatomy.

Strong as is the line of proof afforded by text-books of the advance of science, an equally strong and certainly more interesting line of evidence is afforded by the publication of individual research. When these individual contributions to the literature of a subject such as anatomy are scattered through a multiplicity of periodicals, it is a difficult and laborious process to trace the progress and development of the science; but when it is possible, as in this instance, to concentrate attention on a single periodical over a long period of time, it is comparatively easy to prove that this or that science has, or has not, advanced, provided that it is fairly well represented by the journal selected. As regards anatomy, the Journal since its institution in 1805 affords very singular evidence of the progress made in the nineteenth century, and it does so under two apparently conflicting heads—first, by the nature and mutiplicity of its published anatomical papers, more especially in the first eight decades of its existence; and, secondly, by the comparative absence of anatomical publications in the last two decades.

To take the former line of proof first. When the Journal was founded in 1805, there were in reality two Professors of Anatomy in the University of Edinburgh, Monro Tertius having been appointed in 1798 at the age of twenty-five, and his father, Monro Secundus, who acted with him until 1808. The state of anatomical science in these early days may be gauged by the fact that neither of these gentlemen, not even the brilliant and gifted Monro Secundus, was an anatomist as we understand it to-day, that is to say, a person devoting his whole time and energy to that science. They were both engaged in practice, and both lectured on other subjects besides anatomy. The ineptitude of Monro Tertius nearly ruined the anatomical department of the University, and consequently allowed the first real sign of progress within the period under consideration to emanate from the older institution—the Royal College of Surgeons; for we find Barclay, the College "Professor" of those days or the Extra-Mural Lecturer of to-day, has the distinction of being the first to devote himself entirely to the study and teaching of human anatomy. Barclay was as efficient as Monro Tertius was inept, as is evidenced by the relative sizes of their classes and by their published writings. The very first volume of this Journal contains an example of Barclay's powers as an observer and as a research scholar, whilst the sixth volume contains a critical analysis of Barclay's great work on "The Muscular Motions of the Human Body." These "critical analyses" of the early days of the Journal were what would now be called "reviews," but which were in reality considerably more than the modern day review. They were more comparable to Macaulay's "Essays" than to the so-called review of to-day, that is to say, they not only criticised the author's work and views, but likewise embodied the current state of knowledge in the particular subject dealt with by the author whose works were under analysis. They consequently afford a singularly interesting mode of comparing the relative state of knowledge then and now. Barclay's work was, as we gather from the analysis mentioned, regarded in his day, as it is even to-day, as a classic; this critical analysis constitutes therefore an admirable starting-point in the evolution of anatomical science, as evidenced in the pages of this Journal.

Barclay is represented by other works in the early numbers of the Journal, whilst Monro Tertius's writings are only conspicuous by their absence—still it must not be inferred from this that Monro Tertius did not write, and write well, on a variety of anatomical subjects; but after Barclay there comes a pause in the quality, though not in the quantity, of anatomical publications appearing in this Journal. Attention is not again arrested until the twenty-fifth volume of the Journal, when there is a long and important critical analysis of Sir Charles Bell's celebrated work on "The Nerves of the Human Body." Charles Bell was, it will be remembered, a younger brother of the brilliant and polemic John Bell, another College "Professor" of the bygone days. John Bell had discovered the weak points in the Monro system of teaching anatomy, that is to say, he noticed that Monro taught theory, not practice, and he stepped into the breach with startling success. In this work he was assisted by his younger brother Charles, but as the University at that time made not the smallest attempt to retain in its service its most brilliant sons, Charles Bell was perforce compelled to remove to London, where he awoke one day to find himself famous by the publication of the work which we have mentioned as being reviewed in the twenty-fifth volume of this Journal. This analysis is a long and able notice of Bell's work, and it proves conclusively what an advance Bell effected on the then existing state of knowledge.

Again there comes an interval, this time in both the quantity and quality of the anatomical papers in the Journal, to be followed by an outburst of intellectual activity in the domain of anatomical research. First comes Allen Thomson with his embryological researches. So important are these papers of Thomson's, that their author may not unjustly be regarded as being one of the founders of our present knowledge of embryology. Thomson's most important contributions to this Journal are those dealing with the development of the vascular system and the structure of the human ovum and embryo.

In the fifty-first volume, that is to say, in 1839, attention is arrested by a paper by one John Goodsir, junior, surgeon, Anstruther, Fifeshire, on "The Origin and Development of the Pulps and Sacs of the Human Teeth." It is impossible to read this paper without mingled feelings of amazement and admiration, —amazement at the fact that one who was little more than a boy, and engaged in private practice in an out-of-the-way corner of Fife, could have produced such a magnificent piece of work, and admiration at the genius which could so successfully overcome the difficulties of scientific research under very adverse circumstances. Needless to say the publication of this paper in the Journal gave young Goodsir immediate and lasting fame, and paved the way for his ultimate accession to the Chair so long and so feebly adorned by Monro Tertius.

In a subsequent review of Goodsir's published works, the Journal says of this paper on the teeth, that it was the "most elaborate and most finished of Goodsir's papers—published in the Journal in 1839, it at once established his reputation as a profound and original anatomist."

The publication of this really great paper of Goodsir inaugurates a period of unusual anatomical activity, progress, and brilliance. Struthers, Knox, Turner, Pettigrew, and Goodsir himself, after his accession to the Chair in 1846, all continue to swell the stream of anatomical knowledge.

Struthers affords a singular proof of the progress of anatomical knowledge then and now. He has a contribution on "The Uses of the Round Ligament of the Hip-Joint," prior to his day thought to be a useless adornment to the human frame. To-day Bland Sutton regards the ligament as neither a useless adornment nor a functional structure, but as the remains of a detached inter-articular head of the pectineus comparable to the long head of the biceps flexor cubiti muscle. In all probability the most important of Struthers' contributions to this or any other medical periodical was the one which appeared in the twelfth volume of the new series of the Journal, and entitled "A Historical Sketch of the Edinburgh Medical School." It is an article which not only arouses interest and furnishes food for thought, but which illustrates in the most remarkable way the progress of science. It is impossible for any one to read this singularly interesting article and afterwards maintain the opinion that anatomy is a decadent science.

William Turner commences with some minor articles on muscular variations, but quickly shows the bent of his genius by an important contribution on "Congenital Deformities of the Human Cranium," in which he pays particular attention to scaphocephalus. This he quickly followed by "The Convolutions of the Human Cerebrum topographically considered," the publication of which secured him fame, and laid the foundation of that department of anatomy now known under the name of craniocerebral topography.

Pettigrew, too, comes into prominence with an important contribution on "The Arrangement of the Muscular Fibres of the Ventricular Portion of the Heart of the Mammal," the gist of which still holds its own in the text-books of to-day.

To revert once more to Goodsir. His accession to the Chair in 1846 inaugurated, as we have stated, a period of great anatomical activity. Two of his most important contributions to anatomical science during his tenure of that Chair appeared in this Journal, namely, those on "The Movements of the Knee-Joint" and "The Electrical Apparatus of Certain Fishes." Both these papers threw a flood of light on what were previously dark places; but we feel that we could not more fittingly close this brilliant period in the history of anatomical development better than by the following extract taken from the pages of this Journal when reviewing Goodsir's collected writings after his death in 1867, and which speaks for itself: "During the last thirty years anatomical science has advanced with a rapidity unparalleled at any period of its history."

Brilliant and productive though it was, this period, which extended, roughly speaking, over the middle third of the nineteenth century, was but the precursor of better things to come. To it there succeeded the period of frozen sections and sectional anatomy. Abroad we find Braune producing his classical "Atlas of Sectional Anatomy," whilst progress at home is represented in this Journal and in this field by Symington's works, many of which, but notably his "Topographical Anatomy of the Child," have materially contributed to the progress of anatomical science. About this period there comes too another important historical contribution from the pen of Mr. C. W. Cathcart, who had just succeeded Handyside at the College of Surgeons. This paper, like that already referred to by the late Sir John Struthers, is a valuable summary of the very real progress achieved by anatomy up to that period.

From this period commences the diminution, and eventually the total disappearance, of anatomical papers in the pages of this Journal. In the present series—the third since the foundation of the Journal—there has only appeared one paper by an anatomist on an anatomical subject. It is this suppression of anatomical papers in a Journal previously rich in such work that—paradoxical though it may seem—constitutes the third line of proof of the progress of anatomy as a science.

We have already endeavoured to show that Goodsir's occupancy of the Chair of Anatomy constituted an age of progress. So much so, indeed, that Goodsir actually founded a *Journal of Anatomy and Physiology* in 1850, and of this journal three parts were published. Great as was the progress of anatomy at this time, it was not, however, sufficiently marked as to enable the science to support a journal of its own, and consequently Goodsir's journal soon died a natural death. In the year 1867, however, thanks to the efforts of Sir William Turner and others, notably Sir George Humphry, the existing *Journal of Anatomy and Physiology* was founded, and, as is well known, is still in existence. When a science can maintain a journal of its own, it is obviously a growing science and is progressing, and hence the suppression of anatomical papers in a general medical journal and their publication in a journal exclusively devoted to the interests of anatomy alone constitutes a very real proof of progress.

Speaking of one of the first issues of this journal in 1867, the *Edinburgh Medical Journal* says: "That a *Journal of Anatomy and Physiology* in our country is required, no one acquainted with the rapid progress of these sciences and with the example of continental nations will dispute. . . . Should this new journal receive the support which its excellence deserves, it cannot fail to exert a powerful influence in the promotion of original anatomical and physiological investigations in our country, and its success must therefore be regarded as a matter of importance by all who are interested in the progress of these sciences, or who are aware of the valuable assistance which, at the present day, medicine derives from anatomy and physiology. The time has come when medicine cannot advance without the promotion of the higher scientific learning which, in the education of the physician of the present day, must be combined with, though we hope it will not take the place of, the erudition in classics and mental philosophy which distinguished the physicians of a past age."

So richly have the hopes above expressed been realised, that to-day the *Journal of Anatomy and Physiology* no longer serves both sciences, but is to all intents and purposes a journal of anatomy alone—another proof of progress.

A fourth line of evidence of the advancement and progress of anatomical science is to be found in the foundation within recent times of a Society exclusively devoted to the science of anatomy—the Anatomical Society of Great Britain and Ireland, which meets three times a year in London and once a year in the provinces. Confident in its own strength, the Society admits visitors to its meetings, and if there be any who still incline to the view that anatomy is in its decrepitude, they should attend a few of the Society's meetings. They will require no further proof of the erroneousness of their views.

Although the pages of the *Edinburgh Medical Journal* do not now, and cannot in the nature of things ever again, afford the same amount of evidence of the progress of anatomical science, it may not be amiss to glance at the present and future of anatomy in order to complete this picture of the past.

At the present time, topographical anatomy is developing along the lines of increased accuracy and precision. Formalin has effected a total revolution in our knowledge of the abdominal and thoracic viscera; so great, indeed, has been this revolution, that any one who studied anatomy fifteen years ago, and who has not followed its progress since, might be pardoned if, on returning to an anatomical theatre, he were led to believe that the structure of the human body had completely changed in the brief period referred to; whilst, if the shade of the great Monro Secundus could revisit the scenes of his former triumphs, he would, literally and metaphorically, have to take a back seat in the more modern theatre, and relearn from his illustrious successor, the present occupant of the Chair, Professor Cunningham, the science which he loved so well and adorned so long.

Not only is the actual science of anatomy a changed thing, but there have been opened up and superadded the sciences of embryology and physical anthropology. So rapid is the progress, and so enormous the field, that none can hope to keep pace with modern anatomy who does not devote his whole time and energy to his exacting mistress.

The progress of modern anatomy is everywhere visible—in the greater precision of its text-books, in our knowledge of viscera, in the disappearance of so-called vestigial structures, in the new fields of anthropology and comparative anatomy, and, above all, in the enormously extended range of modern surgery.

As regards the future, much yet remains to be done, and no one need be deterred from undertaking anatomical research by the fear that there are no further worlds to conquer. If the prospects of the anatomist were but as bright as those of his science, he would not to-day be struggling with his art and—his adversity.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL.

The Age Limit. THE question of an age limit was settled by the Court of Contributors of the Royal Infirmary, at the meeting of the Court on 2nd January, on the principle that in future the holders of appointments shall retire at the age of sixty-five, but that the senior members of the present staff shall be at liberty to retain office without an age limitation. Although no definite opinion was expressed, the Court appeared to be influenced by the feeling that, were the present holders of office included in the rule, injustice would be done to men who had been appointed under use and wont which had existed for upwards of a century.

The plain fact is, that only a very small proportion of the members of the Court appreciated what important issues were involved in the proposition. It is subject for regret that the question was raised on a false issue. The original argument presented to the Court was that the retirement of members of the staff at the age of sixty-five was desirable in the interests of the patients. Every one acquainted with the inwardness of things knows that this proposition was merely a peg whereon to hang the hat of discussion. What was under the hat was only revealed as time went on ; the motion for an age limit actually involved material changes in the University ordinances, and some measures of University reform. That certain reforms are necessary is recognised by many interested in the University and the Medical School of Edinburgh, and it may be frankly admitted that some of these changes are more or less cognate to those which were at the bottom of the minds of the contributors who originated the movement. University reform, however, of whatever degree or kind, has always been a complicated and difficult matter to devise ; and, with all deference to the Court of Contributors, it cannot be considered to be the proper body to touch such a difficult question, even indirectly. Deep changes in policy should not be brought about by a side-wind, but by the determinate action of a specially appointed body. The consideration of University reform has always been referred to a Royal Commission, and the question arises whether application should not be made to Government for the appointment of a new

Commission. It is clear that certain of the statutes of the last Commission have not worked in the interests of the University at large, or of the Medical School in particular; they stand in the way of extension, and demand revisal. Many measures of reform might doubtless be brought about had each University Court a free hand in making, altering, or revoking new ordinances; but each Court is hampered by the condition that in making new ordinances, before being submitted to His Majesty in Council, they shall be submitted to the Senatus, the General Council, and University Courts of the other Universities, every one of which may enter objections and spoke the wheel. The utmost endeavour should be made to obtain the repeal of this ordinance. Each University should be permitted to work out its own salvation.

It would not be difficult to show that, had the age limit been made applicable to the present holders of Infirmary appointments, the University funds might have been seriously crippled. No doubt, a professor deprived of his wards might have gone on lecturing, but the prestige of the chair would have suffered by the fact that the teacher could not illustrate his dissertations clinically. In a few years the chair of clinical surgery would have been utterly disabled. Thus at no very distant date forced retirements would have occurred, and the University would have been compelled to expend its funds on pensions instead of devoting them to the extension of its teaching powers.

These points (and many others might be adduced) have been presented in order to show how complicated the whole question is, and why it is necessary to proceed along proper lines. The subject of University reform is thoroughly in the air, and there can be little doubt that it will soon assume concrete form. Local disputes will not help matters. It must be remembered that new rivals are starting up year by year in England; jealousy of the success of the Scottish schools is rampant in the metropolis, and no occasion is allowed to slip by to belittle our systems of teaching. We must not be divided amongst ourselves, but must combine to bring about the strengthening of our Medical School, and to do so in the purest spirit.

As regards the Court of Contributors of the Royal Infirmary, one reform is necessary. The Court holds the success or failure of our Medical School in the hollow of its hand, and can make fundamental changes at its pleasure. Such changes may be brought about at a meeting held at a most inconvenient season, and by a "whip" arranged for by any one holding reactionary views. By a mere accident, so to speak, the policy of generations may be upset without the great mass of the contributors having any voice in the matter. It should be submitted to the Board of Management to arrange for a *plébiscite* to be taken, by which the views of all interested in the institution could be ascertained.

Pityriasis and Seborrhœa.

WHEN one reviews the history of medicine, it is an interesting study to observe the alterations which have gradually evolved as to the interpretation of a symptom. In perfect health the surface of the human skin is smooth as if polished, yet the film of keratin, which forms its external boundary, is being perpetually though imperceptibly cast off, in order that the protection thereby afforded may be complete. Under various circumstances, however, this microscopic exfoliation undergoes an increase, and then what we see is a dust or bran-like coating, which has, from its resemblance to the latter substance, long borne the name of pityriasis. Owing to its entanglement by the hair, this accumulation is greatest and most noticeable on the scalp, and is popularly known as dandriff. The opinions held as to the nature and causation of this have passed through many vicissitudes during the progress of the centuries. Most of these views were purely speculative, were based more on clinical observation than on biological investigation, and indeed, till comparatively recent times, when section-cutting and staining of specimens obtained by a biopsy were brought to great perfection, certainty with regard to many points was unattainable. It is a far cry from Mercurialis in 1577 to Besnier's latest pronouncement in 1902, yet with praiseworthy industry Sabouraud in his new volume[1] has provided an elaborate summary and criticism of the declarations of every writer of note on this topic. It is only necessary to allude to two of these at present. Hebra announced that pityriasis capitis, whether of the dry or greasy variety, was the expression of perverted activity of the sebaceous glands, was what he termed seborrhœa. This passed current till controverted by Unna, who enunciated another doctrine. He, thinking that the tallowy plug which occludes many ducts of the pilo-sebaceous follicles must prevent the escape of the oily secretion, and remarking that there is a concurrent over-activity of the sweat glands, while retaining the designation, yet considered it an oily hyperhidrosis. On this he built his theory of seborrhœic eczema, a theme at first modest, but by degrees widening in its inclusion till it absorbed psoriasis and much if not the whole of eczema. The causal agent he concluded was his morococcus, an organism which he found abundantly visible. Though not universally accepted, there seemed much in its favour.

While Unna, however, had drawn his inferences from the examination of fully developed lesions, Sabouraud selected the earliest commencements, and studied primarily the simplest form, that in which the scales were dry and asbestos-like. He compares a scale to a roof in which each cellule has the form and position of a slate. Since the scale may be encountered in the initiatory stage of some skin affections and during the terminal one of others, it is evident that there are numerous causes which can give rise to it. It may safely be assumed that it arises from functional excess of a physiological process. A desquamative disease may be defined as one in which the scale is from the first and constantly throughout, the primary, invariable, and final symptom. There are only two types which wholly satisfy these conditions, the pityriasis capitis of Willan and pityriasis versicolor. To these, with some reservations, erythrasma may be added. Both of these latter, though not diseases of the scalp, are due to external parasites, and the inference follows that the first is, in all likelihood, of parasitic origin also. There are some scalps which on inspection are found to be strictly smooth and free from visible scales. Such are normal or healthy. But in the majority, on separating the hairs, accumulations of epidermic débris, the component particles of which are more or less fine, are very plainly in evidence. Washing with soap removes the accretions temporarily, but they speedily recur. Between the component particles there is invariably found a cryptogamic organism in great abundance, hitherto uncultivable, and identical with that described first by Malassez and subsequently by Unna, and named by him the flask bacillus. Sabouraud places it alongside the *Microsporon furfur*, which he says no one has yet grown on artificial media. As he does not refer to the reported successes on epidermin agar, it must be presumed that these have not been confirmed. To use his words, as there cannot be a pityriasis versicolor apart from the *Microsporon furfur*, so there is no true pityriasis simplex, unless the fungus of Malassez is present.

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[1] "Pityriasis et Alopécies Pelliculaires," par Le Docteur R. Sabouraud, Chef du laboratoire de la Ville de Paris a l'hôpital Saint-Louis. Paris, Masson et Cie, 1904.

But the detritus which appears on the scalp is not always dry and asbestos-like; it is more often yellowish, greasy, or even pasty to feel and look. In such cases a more complex state exists. There is still exfoliation, but there is in addition exudation of serum and leucocytes. The former makes its way upwards through dilated lymph spaces; the latter stream continuously towards the surface, as if attracted thereto, and accumulate in and between the flakes of epidermic débris. Here, besides very numerous flask bacilli, there is likewise in quantity a staphylococcus, giving a grey culture, which Sabouraud considers is the morococcus of Unna. Though seemingly oleaginous, the yellow scale-crusts are found not to be charged with droplets of fat but with coagulated serum. The same thing may be said about the particles which can be scraped from the reddish yellow dots and patches called seborrhœa corporis or flannel rash, not uncommon over the sternum or between the scapulæ. Yet if these are crushed between a fold of tissue paper, an oily stain betrays itself. Some fatty ingredient must be present, but it is doubtful if much of this comes either from the sebaceous or sweat glands. Ranvier, in sections from the thick skin of the sole, found that some layers of the cells of the rete mucosum below the stratum lucidum became faintly stained with osmic acid, while the superimposed horny cells exhibited short bands of black between their layers. Darier, from scrapings obtained from an example of hyperkeratosis plantaris, extracted a fatty body whose melting point was 53° C., thus notably above that of ordinary fats, and higher than that of lanoline, which is 42° C. Its yellow colour, in addition to this, led Ranvier to call it epidermic wax, but it is much more closely allied to lanoline than to wax. The fat contained in the normal horny layer is the result of a series of intricate chemical transformations. Should such changes undergo modification or remain incomplete, an abnormal fat may be present in the resulting scale-crusts, which does not give the characteristic reaction to osmic acid, and is thus unrecognisable as fat. Here is therefore the necessary mechanism in the fatty parakeratosis encountered by Darier in the seborrhœic dermatitis of Unna. Seborrhœa when existing is a subjacent process, not an essential concomitant. Beneath the pityriasis the gland ducts are found plugged with inspissated sebum, in which is the tenant bacillus of the comedo.

The important question arises, How far the organisms alluded to above are really causal, or merely coexisting and indicatory? There is a prevalent belief that a copious array of micro-organisms habitually pervade the human integument. This view finds its chief supporters in surgeons whose hands, but particularly the pulps of the fingers, are frequently microbian, often very much so. But this is accounted for because they are incessantly soiled. The general surface of the body, though not sterile, does not furnish masses of microbes, unless in the neighbourhood of parts where, from special circumstances, they have aggregated in large numbers, as near a patch of impetigo contagiosa. They are, as a rule, scattered as single elements, and are apparently inert, since they do not multiply. Yet though this grey cultured staphylococcus is constant in pityriasis, it is wholly absent in two scaly affections, clinically allied to it, namely, in psoriasis and in pityriasis rosea, in neither of which has, so far, any microbe been discovered. In artificially induced roughness of the skin, as that of the hands left after too vigorous detergent frictions, such, in place of cleansing and disinfecting, favour the growth of organisms in the disturbed horny layer, and their numbers only lessen with the restitution of the normal smoothness and polish after the lapse of some days. It is thus, in the present state of our knowledge, impossible to ascribe an absolute causative rôle to the profusion of microbes in the scales of pityriasis, but it lends support to the opinion, long since expressed by Pincus, that the ailment is communicable, most probably by the indiscriminate use of hair-brushes.

Science and Sympathy. In these days of eclectic wisdom and inordinate truths, there is the danger of our losing sight of the commonplaces of experience, and it is good for all of us occasionally to review our ethical haversack and inquire whether we are not neglecting the simple instruments at our command, in our fear of being thought conventional and old-fashioned. And one of these commonplaces is, that however highly equipped a man of medicine may be in the machinery of science, he is but half armed for the task before him if he has not more than a moderate insight into the contradictions, limitations, and paradoxes of human nature. The man is often of much more importance than the patient, and he who cannot bring to his command the necessary insight, patience, and sympathy which is required to understand man as man, is a poor and unqualified recruit in the ranks of practical medicine. There are certain half-trained cynics who will persist in regarding love and melancholy as symptoms of liver disturbance, and sorrow and heartache the indications for Carlsbad salts and calomel. How many of us talk glibly about changing the environment of the patient and order him off to Egypt or the Riviera, forgetting that in a great number of cases the man carries his environment with him in the shape of his own fears, hopes, sorrows, and remorse! In a recently published volume of Essays by a Scottish gentlewoman, there is much to remind the intelligent physician of the personal equation in human life. Mrs. Keith Murray's "Introspective Essays" is rich in suggestion and wise in reflection, and may throw open windows in the imagination of him who is content to be more than what Mr. Birrell calls "a rough reader." The suffering and sorrow, the lights and shadows, the inconsistencies and the limitations of life, are here pictured for the imaginative man; and the physician, who is troubled with some handicap to his successful treatment of an individual case, might do worse than turn to her pages and perchance receive there a hint which his text-books and his theories have failed to supply. Human sorrow is at best an intangible thing, and its secret is only reached by a patient study of personality. To this study it is useless to bring the dogmas of the schools, for we will find in the long run, in so doing, that we are dealing with a continual series of exceptions to every rule. The commonplaces of sympathy may do very well in one case, and heroic platitudes may serve in another, but it is wise to remember that the words of sympathy are often resented, and that human reticence and dignity are occasionally so masterful as to give the impression of indifference. "I am certain the melancholy is not due to that cause," said a physician once to us; "she has quite forgotten or is indifferent to it." And yet, as Mrs. Keith Murray says, "over our deepest heart sorrows we are very silent. They may be so still that any but ourselves may think they are dead. In time the white daisies of laughter and song may bloom on their graves, but they do not hide from us what is beneath. People whisper, 'He is getting over his grief, he has forgotten.' And we laugh softly to ourselves as we listen, and gather a few of the daisies to give them to show how right they are in their conclusion." And so the deeper pain eats away the heart, and we order change and we order drugs in vain. It seems rather astounding, and yet it is a fact nevertheless, that many people imagine that when they have persuaded themselves that so and so ought to be, that it is. Our patients ought to have moral and physical courage, and therefore we treat them as if they had; they should not be sensitive to plain truths, and therefore they must be treated as if they were not. One is constantly reminded of this fact in listening to lay criticism of the medical profession. We are not, in stating as much, arguing in favour of pandering to every emotional or hysterical period or pleading on behalf of a servile submission to the weakness of the patient; but it must be remembered that timidity and fear, sensitiveness and repulsion, are definite human qualities, to be respected as much as a man's sorrow or a man's despair. Men of science are apt to sneer at the success of physicians who are infinitely inferior to them in the practice and art of their profession, failing often to inquire whether the practice and art of human nature is not after all half the battle in the treatment of the patient. A man's personal equation is not a secondary consideration, and this commonplace is realised sooner or later by the successful physician. The greatest purist in science need not be ashamed of taking into account the paradoxes and inconsistencies and limitations of human nature, and ought never to forget that the patient and the man are inseparable. And yet that simple truth is lost sight of in the practice of medicine in five cases out of ten.

Ambulance Work.

In 1881, Mr. Reginald Harrison, as president of the Liverpool Medical Institution, gave an address upon the necessity of ambulance work in civil life. The publication of his remarks was speedily followed by improved appliances for accidents and casualties, and two or three years afterwards the modern horse ambulance was introduced in Liverpool. Mr. Harrison's admirable address has been several times reprinted, and a sixth edition of it has recently been issued, under the title of "The Ambulance in Civil Life." With this has been incorporated the *Proceedings of the Metropolitan Street Ambulance Association*, of which Mr. Harrison is president. The objects of the association have been defined as "endeavouring to secure for London, with as little delay as possible, an efficient street ambulance service, and further to promote the movement elsewhere in various ways." Amongst the aims of the association two objects stand out most prominently—first, to bring into unison the constituent parts of such an ambulance service as the streets and other public places of London may require; and second, by the introduction of the horse ambulance, to provide the most improved method of rapid conveyance. It is gratifying to know that, within a few weeks from its formation, more than 1000 members of the profession, engaged in hospital and private practice, joined the association. At the meeting held in the beginning of May, the association appointed a deputation to the London County Council, in furtherance of the aims of the association, and the delegates appeared before the Council on the 9th of May. A deputation of the police committee of the Corporation of London met the committee of the association on 29th June, and both deputations were most sympathetically received. The objects and actions of the association have throughout been received with great unanimity on all hands. We feel it to be our bounden duty to express deep sympathy with the aims of the association, and further to mention our sincere belief that Mr. Reginald Harrison, by his indefatigable endeavours in aid of the movement, has earned a deep debt of gratitude, not only from the inhabitants of London, but from the entire population of this country.

ORIGINAL COMMUNICATIONS.

LARYNGEAL TUBERCULOSIS: ITS TREATMENT AND PROGNOSIS.[1]

By Harold Barwell, M.B. (Lond.), F.R.C.S. (Eng.), *Laryngologist to the Mount Vernon Hospital for Consumption, etc.; Assistant Surgeon to the Metropolitan Ear and Throat Hospital; Surgeon for Throat and Ear Diseases to the Cripples' Home for Girls, London.*

Laryngeal tuberculosis is a very common disease. Percy Kidd[2] estimates that 50 per cent. of cases dying of phthisis show lesions of tuberculous laryngitis in the post-mortem room, and that the disease is clinically recognisable in 20 to 25 per cent. of consumptives. At Mount Vernon, where cases are admitted at all stages of consumption, of 1541 consumptives recently in the hospital, 211, or 13·69 per cent., had tuberculous laryngitis.

In view of its frequency, and of the terrible suffering it causes when allowed to progress unchecked, I think I may say that it does not receive the attention it deserves from the profession in general. This is largely owing to the prevalent idea that the disease is a hopeless one, and that, when once it has attacked the patient, nothing remains to be done but to attempt to relieve his sufferings, more or less ineffectually, with morphia and cocaine. Such was the universal opinion until, in 1887, Heryng produced his important work on the curability of this disease, and its treatment by surgical measures.[3] Since that time there has been a vast improvement in both local and general treatment, and our results are every year better.

Before describing the methods of treatment at our disposal, I must first give a brief account of the various forms which the disease assumes, as these have of necessity considerable influence on the treatment. The tuberculous process shows itself in the larynx in four forms—infiltration, ulceration, tuberculoma, and miliary tubercles. The latter are found at times around ulcers and on the infiltrated tissues, but clinically they are inconspicuous and are not often observed; they also occur as part of a general miliary tuberculosis, when they are of no clinical importance, as the laryngeal disease is overshadowed by lesions of other organs. True tuberculous tumours are very rare in my experience, with the exception of papilloma-like outgrowths in the interarytenoid space; sprouting granulations are common enough. On the whole, the posterior part of the larynx is most frequently attacked, though the epiglottis is by no means immune; this rule holds good more especially for the cords, where isolated lesions are rarely seen in front, in contradistinction to syphilitic disease. The disease affects, in order of frequency, the true cords, interarytenoid space, arytenoids, ventricular bands, and epiglottis. In general, tuberculous lesions are soft and almost semi-translucent, with ill-defined edges and no surrounding areola of hyperæmia. The general opinion that pallor is typical of tuberculous laryngitis, requires revision; many consumptives are anæmic, and then the larynx, in common with the other mucous membranes, will be anæmic too; in other cases the colour will be normal, or reddened from irritation by cough and from secondary inflammation.

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[1] Two post-graduate lectures delivered at the Mount Vernon Hospital, on ovember 3 and December 15, 1904.

[2] Allbutt's "System of Medicine," vol. v.

[3] "Die Heilbarkeit der Larynxphthise und ihre chirurgische Behandlung."

In the arytenoid region, infiltration reaches its highest grade; the submucous tissue is loose, and allows of a great degree of swelling; ulceration therefore occurs but seldom and late in the disease.

The interarytenoid space is often attacked, ulceration is common, sprouting granulations and true papillomatous outgrowths are often found.

The epiglottis is comparatively rarely affected, and usually when the disease in the lungs and in the remainder of the larynx is well advanced; ulceration takes place early, and the ulcers are found especially on its laryngeal surface; the organ becomes swollen, rigid, and dependent, so that its under aspect cannot be seen, but one may nevertheless be tolerably certain that such an epiglottis is ulcerated.

On the ventricular bands infiltration often causes great swelling, ulceration is apt to be deep; swelling in this region may also be due to infiltration within the ventricle and to perichondritis of the thyroid cartilage.

The cords are often attacked; a diffuse red infiltration, most marked behind, is common; a red granular condition, described by Lake as "chorditis granulosa," is very characteristic. One cord is frequently affected alone or is much more diseased than its fellow; such a condition may be due to tubercle, syphilis, injury, or epithelioma, but never to simple inflammation. Ulceration is very common, and is found most often about the vocal process, where it sometimes exposes the cartilage. The subglottic region is not uncommonly invaded, but the disease here is of less importance, for it produces no symptoms unless the infiltration is very great.

To give a clear picture of the disease, it is very convenient to describe three common types.

1. The first—called the *aryteno-epiglottic type*—attacks principally the upper aperture of the larynx. The infiltration begins

over the arytenoids, producing the typical bilateral "pear-shaped" swelling, and spreads slowly along the aryteno-epiglottic fold to the epiglottis; when the latter is infiltrated, the upper aperture presents a swollen bulbous appearance, which has been likened to a turban.

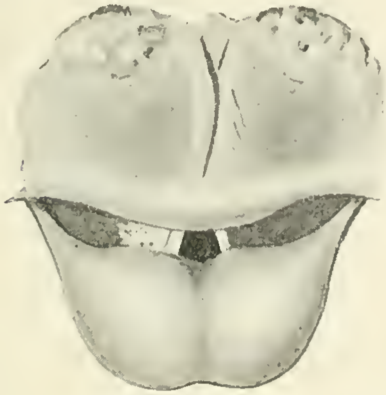

FIG. 1.—Infiltration of arytenoids, slough on right ventricular band.

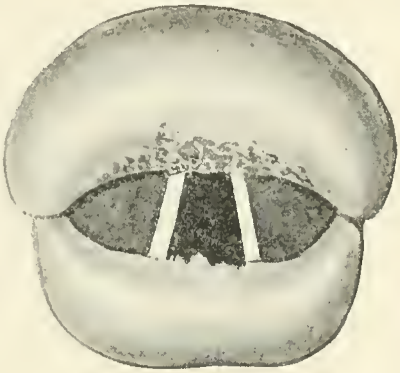

FIG. 2.—Turban-shaped epiglottis.

2. In the "*chorditic*" *type*, the cords are first affected and may remain for a long time the only seat of disease; in the milder grades the affection is often difficult to distinguish from simple catarrh, which is common in consumptives; if the lesion is unilateral, or if ulceration is present, the diagnosis becomes more clear.

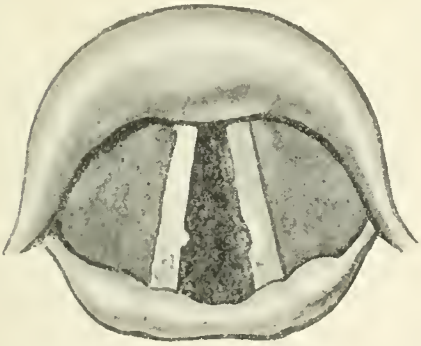

FIG. 3.—Infiltration of cords, ulcer on vocal process.

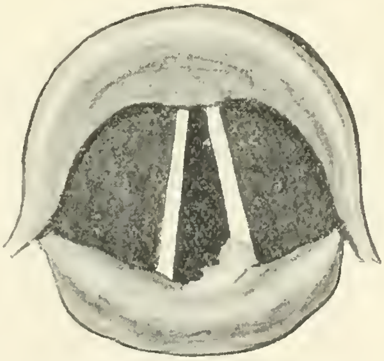

FIG. 4.—Interarytenoid outgrowth, some arytenoid swelling.

3. Often the posterior commissure is the only obvious seat of disease; ulceration or large outgrowths here are usually characteristic, but thickening is very common in simple chronic laryngitis, and may reach a large size in the pachydermatous form; tuberculous infiltration is in general less regular, less opaque, and less dead-white in colour than the pachydermatous lesion.

The principal symptoms which we have to treat are hoarseness and aphonia, cough, dysphagia, and dyspnœa. The hoarseness is of a very characteristic kind; it is a weak voice, and but little effort is used in its production, quite different from the rough "raucous" voice of syphilis and chronic laryngitis. As to aphonia, it should be remembered that functional aphonia is very common in consumptives; it is due to debility, and may or may not be associated with tuberculous laryngitis. Cough is often, of course, due to the pulmonary disease, but it may also be caused by the laryngeal lesion, and amenable to local treatment. Dysphagia is very common; it occurred in nearly a third of Mackenzie's 500 cases; it is a symptom of the gravest and most sinister import; the unfortunate patient, already weakened and distressed by the general disease, is little inclined to take sufficient nourishment, the value of which in the treatment of phthisis is so great that even a mild degree of dysphagia becomes of the highest importance. In a late stage, if this symptom is not relieved, swallowing becomes well-nigh impossible, and semi-starvation rapidly brings about a fatal termination. Dysphagia occurs principally in the aryteno-epiglottic type of disease, especially when there is ulceration of the posterior surface of the arytenoids, or of the laryngeal aspect of the epiglottis; for in swallowing, this latter region is pressed upon by the arytenoid cartilages. Dyspnœa due to laryngeal obstruction is somewhat rare, and is found more particularly when there is excessive swelling of the arytenoids. It is these last two symptoms which make laryngeal tuberculosis such a dangerous and terrible disease.

These, then, are the lesions and the symptoms which we have to treat.

As to general treatment, the measures adopted for the treatment of phthisis are of the greatest value in tuberculous laryngitis, but it may be said at once that open-air treatment cannot replace local measures. Early cases may get well under general hygienic treatment, but such cases are very rare; Heryng[1] observed fourteen cases of spontaneous cure out of 2810 laryngeal cases; on the other hand, it is not uncommon to find the larynx improve under local treatment while the lungs get worse, and improvement and cure may be obtained by such means in the out-patient department of a London hospital. As to climate, a warm and moist atmosphere is best for the open-air treatment of laryngeal cases; fog and rain seem to do no harm; a dusty place is always most unsuitable. The consensus of opinion is against sending laryngeal cases to the high altitudes of Switzerland; on the other hand, very good results have been reported from the combination of local and open-air treatment in Colorado, at an altitude of 6000 ft. The presence of acute laryngitis is an absolute contra-indication to open-air treatment for the time.

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[1] *Journ. Laryngol.*, London, 1893.

As to food, all irritants must be avoided; pepper and spices should not be taken; alcohol, if required, must be well diluted. If there is dysphagia, it will often be found that soft solids are easier to swallow than liquid food, and that it is less painful to "gulp" the food than to take it in the ordinary way. On this is founded the "Wolfenden" method of feeding, in which the patient, lying prone upon a sofa, sucks up the food through a tube from a bowl placed a few feet below the level of the head. Tobacco is best avoided, but I do not find it advisable to forbid it entirely in all cases; many people become so restless and miserable without it that more harm than good results from a cessation of the habit. I then allow two pipes of a cool tobacco a day after meals, in the open air, to avoid the use of smoking-rooms and smoking-carriages.

Rest for the larynx is very important, especially in cases with active lesions of the cords; a loud whisper is almost as great a strain as low speech; a soft whisper is harmless, but a slate and pencil or the deaf-and-dumb alphabet will save the larynx much exertion.

Our methods of local treatment fall into three groups: some are simply palliative, others combat the associated catarrh and secondary infection, while the third group directly attacks the tuberculous disease; they all have their value.

In the palliative treatment of *dysphagia*, cocaine may be employed, preferably in a laryngeal spray-producer and shortly before meals; the weakest effective solution must be used, a few minims of 5 per cent. is usually sufficient at first; it should only be entrusted to the medical attendant or a well-trained nurse, and the instrument should be directed by the laryngoscope. Eucaine may be used instead; it appears to me to be less certain, and for this purpose has the same disadvantages as cocaine.

Morphine hydrochloride is best applied with an insufflator in doses of $\frac{1}{16}$ gr. diluted with 2 grs. of starch; it should be employed half an hour before meals, and only by the nurse or doctor and with the aid of the mirror.

Irrespective of their mental effect, these drugs have one most deleterious action—they produce a marked loss of appetite, the results of which are disastrous to consumptive patients. I never employ them except in the most hopeless and advanced cases, more especially as there is another drug which acts as a powerful local anæsthetic without the same disadvantages.

I refer to orthoform. It is an almost insoluble powder, and is best used as an insufflation of 3 to 5 grs.; it is not toxic, and may be entrusted to the patient; the anæsthetic effect lasts for some time, twelve or even twenty-four hours, but it will not act through unbroken epithelium. Also it is not an antiseptic, but may be combined with such drugs as iodoform, amyloform, or resorcin; such a mixture is a valuable aid to the treatment after operative measures.

The treatment of cough is important, for it often destroys sleep and rest and tires the patient out. Lozenges or pastilles containing cocaine $\frac{1}{10}$ gr., or morphine $\frac{1}{40}$ gr., are sometimes used, but are open to the objection already mentioned; codeine is better, and may be given in doses from $\frac{1}{8}$ gr. to $\frac{1}{5}$ gr.

The best drug for this purpose in my experience is heroin hydrochloride; I prescribe it in a simple linctus, equal parts of glycerine and water do very well, and I give rather large doses, $\frac{1}{12}$ gr. to the drachm. I have never seen bad effects, and am very satisfied with the results.

The mild forms of local treatment which influence the associated catarrh are often useful, and should not be neglected. Steam-inhalations are of great value, especially the common one of Friar's balsam; a simple alkaline spray is good when there is much secretion of muco-pus, or crusts and débris overlying ulcers in the larynx. I have small faith in the remedial value of insufflations, though of the methods of applying analgesics I consider this the best. Intratracheal injections were much used here by my predecessor, Mr. Lake, who devised a syringe for the purpose; they form an antiseptic coating to ulcers, envelop the sputum and prevent further infection, and are especially suitable for mild cases of swelling and superficial ulceration of the cords and inter-arytenoid region. An oily medium, such as paraffinum liquidum, should be used, and the fluid warmed to a temperature of 80° to 90° Fahr. Naphthaline 3 per cent., creolin 2 per cent., izal 2 per cent., and guaiacol 2 per cent., may be employed separately or in combination; the syringe is introduced by aid of the mirror, and the injection made slowly while the patient inspires.

We now come to the more truly remedial measures. The best method for the topical application of powerful drugs is by means of pigments; these are applied with a cotton-wool mop firmly wound on a bent applicator; a brush is very inferior both on the score of cleanliness and of efficiency. The mop is introduced under inspection with the mirror, the patient holding out his own tongue; all pigments must be thoroughly rubbed into the affected parts, mere painting on is not sufficient. The frequency of application should depend partly on the resulting reaction; good results are often obtained with weekly pigmentation, but I prefer shorter intervals and often employ Lake's pigment daily. Cocaine is seldom required after the first time; it should be dispensed with as soon as possible, to avoid a disastrous failure of appetite.

Of all pigments, lactic acid, introduced by Krause in 1885, still holds the first place; fairly strong solutions should be used, 40 to 50 per cent., increasing gradually in some cases to the full pharmacopœial strength (75 per cent.). The application is painful, and the soreness sometimes persists for twelve hours or so; an insufflation of orthoform, given after the painting, will usually relieve it.

Formalin, applied for this purpose by Solis Cohen, is a valuable remedy; I employ strengths of from 5 to 7 per cent. Carbolic acid, and its derivatives phenol sulphoricinate and para-mono-chlor-phenol, have been largely used. I now employ almost exclusively a mixture introduced by Mr. Lake, containing lactic acid 50 per cent., formalin 7 per cent., carbolic acid 10 per cent., in water, and I am very satisfied with its effect; the phenol acts as a local anæsthetic, and pain is decidedly less than when lactic acid is used alone. When the ulcer begins to heal, or if there is too much reaction, I dilute the solution to half strength.

For mild cases, such as slight infiltration of the cords, I sometimes use iodine vasogen, a 10 per cent. solution of iodine in an oxygenated petroleum preparation.

Under such treatment, ulcers frequently heal, and moderate infiltration is cured, but none of these pigments have any great effect upon massive infiltration lying beneath unbroken epithelium, such as occurs commonly in the arytenoid region; for this reason, submucous injections have been introduced, in this country largely by Watson Williams, and by Chappell in New York. The former injects a few minims of guaiacol or 1 in 1000 perchloride of mercury; the latter employs an oily solution of creosote. The injections are made every fifth or sixth day, and must only be made into regions where the submucous tissue is loose; even then there is some risk of sloughing, and I consider the method no safer and less certain than surgical measures, and quite as severe.

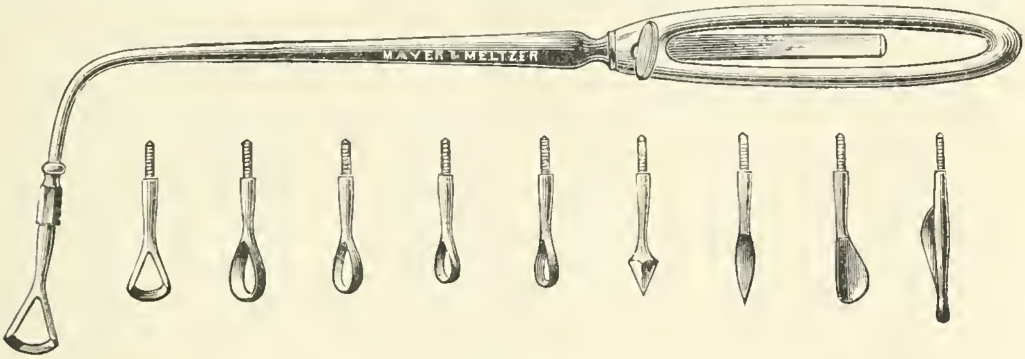

FIG. 5.—Heryng's curettes.

It is to surgical methods that the best results are due in cases of massive infiltration and deep or extensive ulceration; it is simply the application of general surgical principles to scrape tuberculous ulcers and to remove tuberculous foci.

Scarification was introduced by Moritz Schmidt, but has now been abandoned by him in favour of more thorough measures; it still has its value in cases of acute secondary infection and perichondritis.[1]

Curettement, introduced by Heryng, is especially useful for ulcers and granulations on the posterior wall, ventricular bands, and epiglottis; it is not effectual for large arytenoid swellings or massive epiglottic infiltration.

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[1] "Krankheiten der oberen Luftwege," Aufl. 3, 1903.

For such cases double curettes or punch-forceps are necessary; there are several available instruments—Krause's double curette, Gougenheim's "emporte-pièce," and Lake's forceps. I employ the latter instrument, which is very strong and efficient.

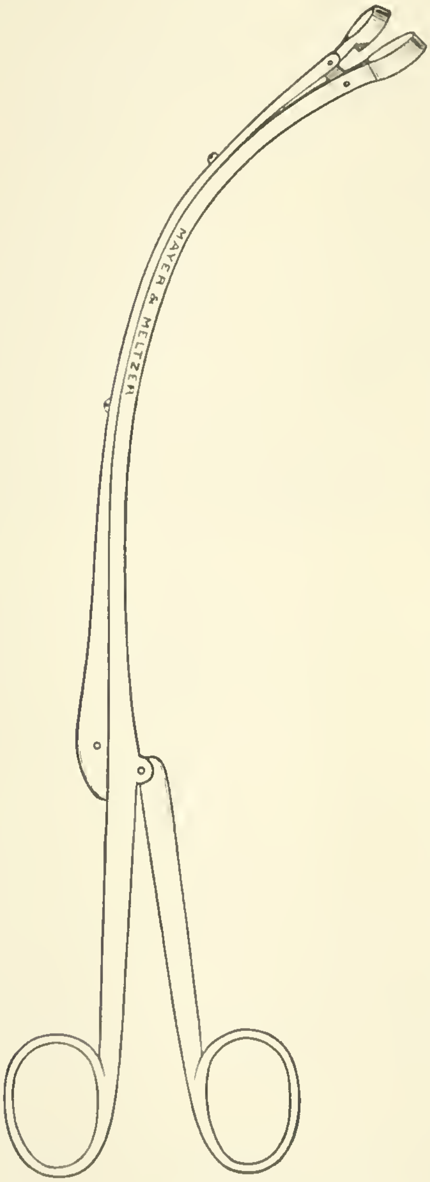


FIG. 6.—Lake's cutting forceps.

Cocaine must be applied, but such a complete anæsthesia as is necessary for the removal of laryngeal growths is not required. Hæmorrhage is very slight; after operations on the epiglottis it may be rather more marked; Heryng has had severe bleeding twice after removal of hard infiltrations of the ventricular bands; in such cases the part should be painted with cocaine 10 per cent. in adrenalin chloride solution 1 in 1000, any clot removed, and equal parts of lactic acid (B.P.) and liquor ferri perchloridi applied to the bleeding point. Immediately after any surgical proceeding I paint the part with Lake's mixture; insufflations of orthoform with equal parts of iodoform or amyloform are very useful. The larynx heals with truly marvellous rapidity; the wound very seldom becomes inflamed; if it does, a simple alkaline spray or a nebuliser with menthol in paroleine will combat the reaction.

Soreness after operation is seldom marked; indeed, such treatment is hardly more severe than the use of pigments. If dysphagia was present, an immediate improvement results from a suitable operative procedure, such as scraping an ulcer or cutting away part of the arytenoid swelling.

The galvano-cautery is recommended among others by Gleitsmann and Price Brown; good results may be obtained, but it is slow and tedious; as Heryng says, the "eschars remain too long, excite inflammation, increase the dysphagia, and aggravate the patient's distress for a time." Electrolysis is also slow and painful; both these methods may be used for infiltration of the false cords if hæmorrhage is dreaded, and for subglottic swelling, which is difficult to reach in other ways.

Some external operations must now be mentioned; cases of perichondritis, especially of the thyroid cartilage, occur at times with the formation of a tuberculous abscess in the neck; these should be treated on ordinary principles. The abscess is opened and scraped, any patch of necrosis on the cartilage cleared out, and the wound closed without drainage. Such cases do well if the rest of the larynx is unaffected; but the surgeon must always be prepared to remove the ala of the thyroid if it is found extensively diseased.

Tracheotomy was warmly recommended by Moritz Schmidt as a curative measure; this opinion is endorsed by few laryngologists, and since the adoption of internal surgical measures, he himself recommends it less frequently. There is great danger of tuberculous infection of the wound, and in general this operation should only be done for urgent dyspnœa; unless this symptom is very acute, it can usually be relieved by the punch-forceps or curette.

Thyrotomy appears to be the ideal treatment for primary laryngeal tuberculosis, and for cases where the lung disease is in a very early stage, provided that the laryngeal disease is so far advanced that the prospect of cure by local measures is no longer hopeful. Such a case is very rare, for when the disease has reached a late stage in the larynx the lungs are usually severely affected. If infection of the wound occurs, this would probably be under control by lactic acid and scraping.

Partial laryngectomy may be occasionally called for in cases of thyroid perichondritis and necrosis, if the rest of the larynx is fairly healthy. Total laryngectomy is, in my opinion, unjustifiable; it leaves the patient in such a wretched condition that it can have no place as a palliative operation; but if the lesion is so extensive as to be beyond the reach of treatment, even by thyrotomy, the lungs will be extensively diseased and complete cure out of the question.

We must now consider the principles which should guide us in our choice of these different methods of treatment in individual cases, and for this purpose it is necessary to keep the objects of our treatment clearly in view. Our aims are limited by the possibilities of the case, and are of three kinds—(1) to completely cure the patient; (2) to cure the laryngeal disease; or merely (3) to treat the symptoms and relieve suffering. We may divide our patients into groups corresponding to the results we may reasonably hope to obtain; and the state of the lungs will be our chief guide in deciding what our aims should be in any particular case.

In the first group come those cases in which the lung disease is in an early stage and not progressing rapidly, and where the general health is good; and even somewhat more advanced cases if they show a tendency to improve; in fact, all cases in which, from the condition of the lungs, the physician would give a fairly good prognosis; the rarer cases of primary and apparently primary laryngeal tuberculosis are also included. Of these cases it may be said that, however extensive the laryngeal disease may be, a cure is possible; and that the less disease is apparent in the lungs, the bolder and more energetic should our treatment be. In most of these cases the laryngeal affection is not far advanced, and persistent local medication combined with general treatment will effect a cure; but if the case does not respond, little time should be lost in resorting to surgical treatment. Rarely, the larynx may be extensively affected, while there is little or no disease in the lung; in such cases, thyrotomy may in the future prove of great value. Spontaneous cure may occasionally occur in the early cases under favourable hygienic conditions, but such an event is very rare; and I would strongly advise against so-called expectant treatment—that is, no useful treatment at all—in the hope of spontaneous cure; for in this way the favourable time for treatment will be lost. In primary cases, the need of early energetic treatment is all the greater, as there is a distinct risk of secondary infection of the lungs.

The following case of apparently primary tuberculous laryngitis was under the care of my predecessor, Mr. Lake:—

Case 1.—W. A., a young school-teacher, was sent to the hospital by Dr. Bennett of Leicester; one day he inhaled, in the chemical laboratory, the fumes of nitric oxide, was seized with a violent fit of coughing, and lost his voice for some days. Dr. Bennett found the epiglottis red and swollen, and thought he was able to detect some minute crepitations at the left apex. After a fortnight's in-patient treatment at Mount Vernon, the much enlarged epiglottis was removed, in February 1902, with the galvano-cautery snare, and though he previously suffered from increasing dysphagia, he was able to swallow on the same day without discomfort. Tubercles and giant cells were found freely scattered through the diseased tissue. He left the hospital in very good health, no physical signs of disease could be found in the lungs, the epiglottis was soundly healed, and in 1903 he was in South Africa, and probably completely cured.

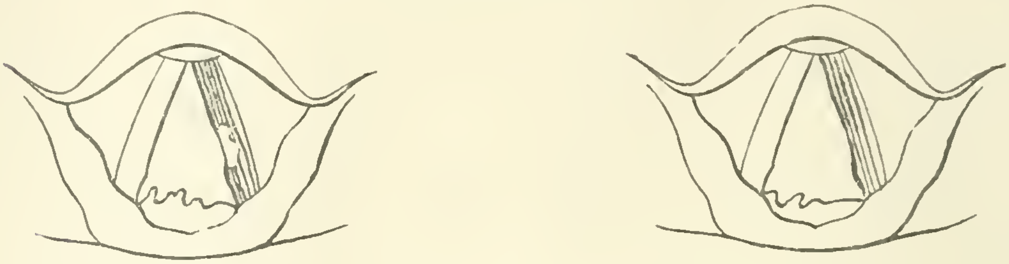
The next case was not one of complete cure, but at least the patient was well and at work three and a half years after he was first seen with very extensive laryngeal tuberculosis.

Case 2.—J. G., a man of 30, was sent up by Mr. Waggett and admitted under Mr. Lake in January 1899; the chest was only very slightly affected, but the laryngeal disease was very advanced; on the front of the epiglottis were three or four small tuberculous masses, and the arytenoids were so enlarged that only part of their entire thickness could be removed at a time with punch-forceps. He was under treatment for six months, and the whole of the infiltrated arytenoids and aryteno-epiglottidean fold, as well as much interarytenoid tissue, were removed. When he left, the larynx was completely healed, and the lungs appeared to be cured. Towards the end of 1901 he complained of occasional external swelling; and when seen again in January 1902, the thyroid cartilage was enormously thickened, and internally there was a conical projection at the right ventricular band. Tuberculous perichondritis of the thyroid cartilage was diagnosed, and on March 8 the region was exposed by a large flap-incision, and a yellowish semi-transparent mass was found beneath the perichondrium, which was afterwards found to contain beautiful specimens of giant cells; this, and a small spot of disease on the cartilage, were cleaned out, and in May the patient was in good health and at work. I have just heard that he died recently, in December 1904, and that he was not troubled with any laryngeal symptoms.

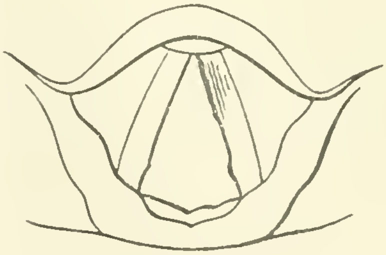
The second group includes the majority of cases met with in practice, namely, those where the lung disease is so far advanced that a definite cure cannot be expected, but without the adverse symptoms to be mentioned under the third group; they are mostly cases of chronic phthisis without great debility. Here, even when severe symptoms are absent, we must do our utmost to obtain local cure; for in most cases it is certain that, if the disease is allowed to progress unchecked, severe symptoms will sooner or later supervene, and the patient die a very painful death. Every one who has watched patients die with extensive tuberculous laryngitis, must be impressed with the importance of doing everything possible to stay the progress of the disease, and I am personally convinced that this can be done in the cases in this group. In this connection I would lay stress on the great importance of routine periodical examination of the throats of chronic consumptives, so that the local disease may be treated and healed at an early stage. Ulcers, granulations, swelling of the cords, etc., should be treated with pigments, and, if necessary, by curettage; slight swelling of the arytenoids or epiglottis does not indicate immediate operation, but if it is marked or increases in size, or if dysphagia comes on, it should be attacked with punch-forceps without much delay. Relapse from fresh infection is not uncommon, but if such cases are watched, it can be met by early treatment on the same lines.

Case 3.—A. W., a woman of 31, attended as an out-patient in November 1903; there was consolidation of the left apex, and there had been hoarseness and almost constant aphonia for three years. The larynx showed diffuse infiltration of the left cord, with an ulcer at its centre, and numerous small interarytenoid outgrowths; local treatment was difficult, as she was very nervous. She was treated with pigments of lactic acid and formalin, and, when I saw her in June 1904, the ulcer was healed, but the redness and infiltration of the cord remained, as well as the interarytenoid mass, and the aphonia persisted. Lake's mixture was used weekly in the out-patient department, and in August the voice returned and became steadily stronger. In October, phonation was good, the left cord was only slightly swollen at its anterior end, and the interarytenoid outgrowths had disappeared, leaving a slight even thickening. Treatment was discontinued, and on December 6, when I saw her last, the condition was unchanged. The lung disease seems to be unaltered.

In the third group come the hopeless cases, in which even local cure cannot be expected, though in some even of these temporary healing can be obtained. These are cases where the lung disease is advanced or progressing rapidly: where there is rapid loss of weight, hectic fever, or severe cachexia: cases of miliary tubercle: and also cases in which the disease of the lungs is chronic, but pronounced, if the laryngeal lesions are very extensive. Here treatment must be entirely palliative. If there are no severe symptoms, only such mild measures as are not distressing to the patient, such as inhalations and sprays, should be employed; but if dysphagia or dyspnœa is present, palliative drugs will too often be found of little avail, and active local treatment will be by far the most effective way of relieving symptoms. The curetting of an ulcer, an operation with punch-forceps on the arytenoid, or excision of the infiltrated epiglottis, will in properly selected cases often produce immediate and permanent relief. It is remarkable how a very partial removal of the arytenoid infiltration relieves dysphagia; this result may be due to relief of tension, or perhaps to the effect on the diseased nerve terminals, as Dansac[1] and Gougenheim[2] believe.



Nov. 12, 1903. Aug. 4, 1904.



Oct. 20, 1904.

Fig. 7.—Progress of the case of A. W.

Case 4.—T. K., a man of 31, with advanced phthisis, came under my care in June 1904. He had been hoarse for four years, and had suffered from dysphagia for a month; this had been so severe for nine days that he could "only force down fluid food," and he had lost 6 lbs. in weight in a fortnight. There was decided obstructive dyspnœa, with inspiratory stridor. The arytenoids formed two enormous pear-shaped swellings, almost touching the epiglottis and blocking the laryngeal aperture, and there was a large slough on the right ventricular band. He was treated as an out-patient throughout. I at once clipped away part of the right arytenoid swelling, and a small piece from the left. The next week he returned very pleased with the effect; he had been able to eat meat immediately after the operation, and had gained a pound. I removed the slough, and saw the patient weekly; in a month he was at work, and had no dysphagia. Three weeks later he was short of breath, and had given up work again; there was no dysphagia or laryngeal dyspnœa, and the arytenoids were much smaller. From this time he rapidly sank, and died on September 8; his father told me that to the end his throat gave little trouble, and there was no obstruction to breathing.

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[1] *Ann. d. mal. de l'oreille, du larynx, etc.*, Paris, December 1893.

[2] "Atlas de Laryngologie."

Case 5.—Sarah S., æt. 35, attended early in 1904, suffering from very severe dysphagia; there was consolidation of the upper half of the right lung, with cavitation. The epiglottis was much infiltrated, and was excised in March, with great and rapid relief. When I saw her in June, she complained of slight pricking pain on deglutition. The epiglottis was soundly healed; there was a slough on the right ventricular band, and slight arytenoid swelling. Lake's pigment was employed, and in August the ulcer was completely healed, and there was no dysphagia. In September her general health became much worse, but there was no return of pain until November; it was then not severe enough to prevent her from swallowing as much as her feeble appetite allowed. The stump of the epiglottis and the arytenoids became rapidly swollen; on the latter miliary tubercles and superficial ulceration became visible. As the general weakness was very great, and dysphagia not severe, I refrained from surgical measures, employing only orthoform. She became too weak to visit the hospital, and Dr. Cowan, who attended her, kindly informed me, on November 24, that she can swallow soft food in comparative comfort. Here severe suffering has been relieved, and life prolonged at least six or seven months.

Finally, there are those cases in the very last stage of the disease, unable to swallow without severe pain, but too weak to bear any local treatment; in such only palliatives can be used, and they are too often ineffectual. These cases are so pitiable that one can only wish that they had been submitted to active treatment at an earlier stage, by which, if cure was impossible, much suffering might have been prevented.

From these considerations it will appear that, if dysphagia or laryngeal dyspnœa is present, the only contra-indication to active treatment is such extreme weakness as would unfit the patient to bear the slight shock of surgical measures.

On the other hand, when there are no severe symptoms, operative treatment is contra-indicated if the lung disease is acute or very advanced, and the regular use of powerful caustic pigments is almost as trying to the patient as the curette or punch-forceps. Among the signs of acute or advanced phthisis, the temperature is very important; in general, a high temperature, or a large daily variation of temperature, contra-indicates operation for the time. So also recent hæmoptysis, rapid loss of weight, and great debility debar us from active treatment, provided always that severe symptoms are absent.

If, however, no pulmonary lesion can be found, or if it is in the curable stage, thorough local treatment is called for in all cases, and surgical measures must be undertaken without delay if the lesion is so far advanced as to require it.

In the large intermediate class of chronic consumptives, operative treatment offers a good chance of local cure and prevention of suffering; here various factors must be considered, among others the temperament of the patient. I must endorse Heryng's statement,[1] that surgical treatment is contra-indicated "in persons who are much depressed, with the system run down, and lacking in determination, . . . who are almost frightened out of their wits by a few streaks of blood in the sputum, and regard with terrified gaze every instrument the surgeon takes into his hand. We would also avoid this treatment in nervous, impatient, mistrustful persons, who change their doctor frequently, . . . or when their occupation or character would prevent them from taking care of their health, obeying the doctor's orders, or thoroughly carrying out the treatment." I need hardly say that gentleness and tact will do much to reassure such patients; many people are nervous, and show their throats badly when they first come under examination, who afterwards become excellent patients.

The prognosis has been to some extent considered in what I have already said; it has much improved in late years, by reason of the advance both in our local methods of treatment and in the general treatment of consumption, the prognosis of which is now much better than it was some years ago. Tuberculous laryngitis, though no longer hopeless, is and always will be a serious disease, largely because it seldom occurs until the disease is well advanced in the lungs. One factor, which often makes the prognosis appear even more serious, is the remarkable way in which the physical signs of phthisis become masked when the larynx is affected: so that, of two patients showing similar signs of lung disease, the one with laryngeal involvement will be in the worse position, because in reality his pulmonary lesion is the most extensive. If he rapidly sinks, this may be put down to the laryngeal complication, although, after all, his lungs are riddled with tubercle. A mild degree of laryngeal tuberculosis has probably no influence on the progress of the pulmonary disease: but if dysphagia or laryngeal dyspnœa comes on, the laryngeal lesion reacts disastrously upon the lungs. We may say that, if the lungs are curable, the larynx is curable too, and that a cure is probable if the disease of the larynx is in an early stage; in such cases it is easier to cure the larynx than the lungs. One often sees ulcers in the larynx heal under local treatment while the lung disease gets worse, and tuberculous laryngitis can be cured in the unhealthy surroundings of the London out-patient class; on the other hand, open-air treatment alone rarely produces local cure of undoubted cases, even in the early stage.

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[1] *Journ. Laryngol*, London, 1893.

Statistics are not of great value in this connection, as after-histories are so difficult to obtain. Cures of advanced cases lasting over years will always be rare, because advanced cases seldom occur except in advanced phthisis, and such cases usually die eventually of the pulmonary disease; I would rather insist on the frequent cures of early cases, and again emphasise the importance of routine examination, early diagnosis, and active treatment. Such methods are in use at Mount Vernon, and our latest in-patient reports give forty-four cures out of two hundred and eleven cases of tuberculous laryngitis, or 20·85 per cent., besides 14·21 per cent. much improved; this is a higher proportion than most institutions have been able to give, and it is due to the fact that many early and many very slight cases are included.

A few words as to the influence of the locality diseased on the prognosis. In general, the aryteno-epiglottic type is bad, because the affected parts are close to the pharynx, and dysphagia is common and severe: a very large mass of tissue becomes infiltrated, and the disease is difficult to remove completely. The epiglottis cases are the worst, for dysphagia is especially common, also the epiglottis is usually attacked late, when the rest of the larynx and the lungs are in an advanced stage of disease. The prognosis is very bad in cases of perichondritis, and necrosis of cartilage is always fatal, except that in a few cases an arytenoid has been coughed up without any serious ill effects. The only exception is in cases of thyroid perichondritis with external swelling; if there is no disease within the larynx, and none, or very early disease, in the lung, as is apt to be the case, ordinary surgical treatment has a good chance of effecting a cure. Interarytenoid cases are comparatively mild; symptoms are slight, the progress is slow, and local treatment with curettes and pigments is easy. Uncomplicated affections of the cords are the most favourable of all; hoarseness comes on early and attracts attention, and there is no great mass of diseased tissue.

Some figures collected by my predecessor, Mr. Lake,[1] illustrate these points. Of seventy-two epiglottis cases a proportion of 1 in 6½ died; in a hundred and forty-eight cases of arytenoid disease the proportion was 1 in 9¼: while of thirty-five cases, in which the cords alone were affected, only one died.

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[1] "Laryngeal Phthisis," 1901.

Cases complicated with syphilis often do badly; the syphilitic lesions tend to spread and become infected with tubercle; and in advanced cases the tendency to stenosis has a very bad effect. Many of the cases, however, answer well to mercury and potassium iodide, combined with the local treatment for tuberculous laryngitis.

Pregnancy has a remarkably bad effect on laryngeal tuberculosis; of late the question has been raised of the early induction of abortion in such cases, in order to save the life of the mother, for a very large proportion die during or soon after confinement.

PRESIDENTIAL ADDRESS, DELIVERED TO THE EDINBURGH OBSTETRICAL SOCIETY.

By N. T. Brewis, F.R.C.S.Ed., *Assistant Gynæcologist, Edinburgh Royal Infirmary.*

Ladies and Gentlemen, Fellows of the Edinburgh Obstetrical Society,—In taking the chair to-night, and starting the work of our sixty-sixth session, I feel powerfully the sense of my utter unworthiness in occupying a position of such distinction. This sense of unworthiness makes me feel, all the more deeply, your kindness in electing me a year ago to a post which, in the past, men of great eminence have been proud to hold. I can only say that I thank you from the bottom of my heart. It is fortunate that the success of the Society depends to such a small extent on the efforts of the President. The author of an old romance has made one of his characters say: "Your lordship may hold it for most certain that the office of President is not a little honourable but jointly therewith very tedious and burdensome." Needless to say, the President of the Obstetrical Society cannot agree with the latter sentiment. His task, if we exclude the preparation of an annual address, is of the easiest and most delightful kind. He has to preside over a band of earnest workers who require neither incentive nor persuasion, but who work for the work's sake, and keep the lamp of scientific progress burning, and hand it on from year to year. This indicates the health of the Society, and signifies a living force in the obstetrical world.

I know of no society in which this spirit is more manifest than in our own. It has existed from the beginning, and I think we may look on it as an inheritance from the founders. The result of this working spirit, as is apparent to-day, is, that not only is the Society intellectually and scientifically vigorous, but it is also strong numerically and financially. But while this is a matter on which we can reasonably congratulate ourselves, we have to deplore the ravages in our ranks, made inevitable by the relentless hand of death, which robs us every year of some of our brightest ornaments and most useful workers. It will be my sad privilege to refer on another occasion to them individually.

> "The memory and monuments of good men
> Are more than lives, and though their tombs want tongues,
> Yet have they eyes that daily sweat their losses,
> And such a tear no time can value."

When I joined the Society twenty years ago, the Fellows numbered 331; to-day they number 579. The income twenty years ago was £136, 16s. 11d.; to-day, £694, 18s. 2d.

The numerical increase and the financial progress which our Society has made during these years are in keeping with the remarkable advances that have been made in the subjects for the promotion of which this Society exists. We know that no branch of medical or surgical science has developed during the past two decades with such rapidity as that of gynæcology, and we are conscious that, viewed from its surgical aspect, it has become, we might say, a perfect speciality. In attaining this prominent position, our Society can justly claim that its Fellows, past and present, have contributed their full share.

To-night, in the time at my disposal, I shall take note of some of the advances—to attempt them all would be impossible—which have been made during the last twenty years, paying particular attention to the evolution in technique during that time, and using by way of illustration, for the most part, two major operations. My treatment of the subject must be imperfect and fragmentary at the best, and I hope those Fellows who know the ground better than I do will bear with me.

In our volume of *Transactions* for 1883–84 not more than twenty specimens, removed by abdominal section, are recorded as having been exhibited, while in the volume of last session there are upwards of sixty recorded. This testifies to the great activity which now prevails in this department. In a record of cases treated by the late Dr. Angus Macdonald in Ward 28, Royal Infirmary, from 1st November 1883 to 30th April 1884, the first point which strikes us is the small number of cases of abdominal section—four in six months—a number which nowadays would be considered by some operators to be only a good forenoon's work. Dr. Macdonald, however, relates ten consecutive successful cases of laparotomy during the following six months. Of the four cases mentioned above, two were undertaken for the removal of ovarian tumours, and two were hysterectomies for fibroid tumours. Both the ovariotomies were difficult, on account of adhesions.

Twenty years ago, the number and character of ovarian tumours operated on differed to a great extent from those at the present time. Then, the tumours which came to the operator were comparatively few in number, were generally of large size, and were frequently complicated with formidable adhesions. Now, their number is legion; frequently they have not attained huge dimensions; adhesions are very often absent; and when present they are seldom so intimate and universal as those at the time of which I speak. The reason for this is to be found in the fact that practitioners are better educated; they are able to recognise tumours early in their development; they are aware that the sooner these tumours are removed the more certain will the recovery be; they know that tapping never cures an ovarian tumour, but brings about complications, and that such a method is only justifiable for tumours which cannot be removed. While this dictum regarding tapping is incontrovertible, we mention one condition in which the rule may be departed from, namely, where the tumour is removable, but when, from its size, the patient's heart, which may be fatty, is so much embarrassed and weakened, that operation would be attended by grave risk. In such a case, to tap the tumour a few days before removing it, so as to allow the heart to regain tone, is quite a justifiable proceeding.

Almost of equal importance to this question—that of tapping an ovarian tumour before removal—is the question of tapping during removal. Tapping or aspirating the cyst during ovariotomy is, we consider, the weak point of the operation; we see how frequently it is unsuccessfully accomplished. The walls of some ovarian cysts are so thin and friable that they do not embrace the cannula tight enough to prevent the escape of the fluid at the sides of the instrument; while in others the contents are too thick to run through the cannula, and require to be evacuated by enlarging the opening of the cyst with the knife. If the contents of the tumour are innocent, no harmful results ensue; but if, on the other hand, they are septic, or contain malignant elements, the results are otherwise. Leopold recognised this twenty years ago. In a paper read by him describing thirty laparotomies, he makes the statement, "Whenever it was at all possible, ovarian cysts were lifted out of the abdomen unpunctured." In his remarks on one of the recorded cases, Dr. Macdonald mentioned that he was obliged to incise the cyst wall and break up its contents, and expressed some anxiety at finding that the fluid contents, when subjected to microscopic examination by Dr. Foulis, contained sarcomatous elements.

After the abdomen is opened, while it is easy in many cases to diagnose, by well-known physical signs, malignant degeneration of an ovarian tumour, yet, in many cases, to do so is impossible; for example, in the case of the papillary form when the papillary masses are within the cyst. The wise operator will remove all tumours entire when he is doubtful as to their contents; and if for any reason the fluid from such tumours should find its way into the wound or the peritoneal cavity, he will be careful to subject the peritoneal cavity to thorough irrigation before closing the wound. The second case of ovariotomy narrated by Dr. Macdonald was one of great difficulty. The tumour was deeply placed in the pelvis; there were numerous adhesions, and much oozing, and at the completion of the operation a glass drainage-tube was inserted in the lower angle of the wound. The patient died from sepsis on the fourth day.

Dr. Macdonald, commenting on the case, says: "I cannot help thinking that, notwithstanding the severity of the case, all might have gone well had we not had in the large ward some rather putrid cases. The drainage-tube seems to have been a source through which the peritoneal fluids became septic. I need hardly say that we used every precaution within our power, by protecting the end of the tube from the air, to avoid this result. Be this as it may, it is evident that the patient died of septicæmia, in spite of all our efforts."

These remarks lead me to refer briefly to a matter which I consider of great importance, namely, the danger of infection being transmitted from a patient who is already septic to one who is not, and the danger of admitting septic patients into a ward occupied by patients who are aseptic, and on whom the surgeon hopes to perform an aseptic operation. Each septic patient is a centre of infection, and should be as severely isolated from patients who are free of infection as an infectious fever patient is separated from the rest of the community.

We know that ordinary air is full of micro-organisms, though for the most part they are non-pathogenic; but air in the vicinity of a stinking abscess or foul-smelling case of cancer of the cervix must be crowded with pathogenic bacteria, and must constitute a danger, even though the surgeon and his assistants have been careful not to come in contact with the patient or her discharges. There must also be a great risk of infection being conveyed by nurses who assist at operations, and who have also ward duties to perform.

I consider that the danger which these putrid cases entail is not confined to the time of the operation, but exists afterwards as well; the danger does *not* end with the closure of the wound. That patients who have been operated on are infected, to a certain degree, by these cases, is evidenced by the post-operative temperature charts in hospitals. There are frequent rises of temperature which, in the majority of cases, if not in all, are due to infection; and though in most cases the patient's recovery is not interrupted, yet it has been the sad experience of most operators to have had a case go wrong and terminate fatally after the simplest and most correctly performed operation. Such calamities are, I believe, sometimes due to what one might term "hospitalism." In every hospital where surgical work is done there should be a ward set apart for septic cases, completely isolated, and worked by a staff of its own. These septic patients are seriously ill, and when they ask admittance to hospital they cannot be refused; but it is obviously unfair that other patients should, on account of these, run a risk which is preventable.

The most marked change in technique in the operation of ovariotomy, during the last twenty years, has been the almost complete abandonment of the drainage-tube. This remark also applies to other abdomino-pelvic operations. Between ten and twenty years ago, the drainage-tube was used in the majority of cases. Its employment, however, was evidence simply of imperfect technique. It has now been proved to be unnecessary, and to be, moreover, a channel of infection. It has, therefore, been given up except in rare cases, and in these it is usually carried out through the vaginal roof, a method advocated by Marion Sims many years ago, and at the time universally condemned.

Two of the four cases of abdominal section recorded during session 1883–84 were hysterectomies for the removal of fibroid tumours. In both, the pedicles were treated extraperitoneally by Kœberle's serré-nœud. At that time only such cases as presented a pedicle which could be constricted by wire, clamp, or elastic ligature were considered operable. Péan and Bantock with the serré-nœud, Hegar with the elastic ligature, and Keith with his clamp, were doing good work. Hegar reports twelve cases with one death, Keith twenty-five cases with two deaths, while Bantock records fourteen cases with one fatal result. But all operators longed for a reliable internal method; they felt the extraperitoneal methods were clumsy, and they hoped that, as in ovariotomy, the intraperitoneal method had been successfully evolved from the extraperitoneal; so too, in myofibromata, some method would be devised by which the stump could be left with safety within the abdomen. Their great fear was hæmorrhage from the stump, and septic infection through the cervical canal communicating with the vagina. They aimed at controlling the hæmorrhage by strangulating the pedicle, and not by securing, as we now do, the vessels which supply it; while they thought it necessary to render the stump aseptic, which was really already aseptic, by cauterisation, the application of chloride of zinc, etc.

Schroeder, with others, believed that the extraperitoneal method would have to give way to the intraperitoneal, and he had already elaborated and practised with encouraging success his operation of tying the pedicle and dropping it, as in ovariotomy. The steps of this classical operation will be best understood from his own description, which was published in the *British Medical Journal* of October 13, 1883. He says: "I sever the appendages by first doubly ligaturing the infundibular pelvic ligament with its spermatic vessels, and dividing between these ligatures; then by repeating the same process with the round ligaments. After this has been executed on both sides, it is easy to separate the tumour from the surrounding tissue without causing any considerable hæmorrhage; and now the indiarubber ligature is placed round its base. The tumour is then cut away, with the uterus, above this ligature. Next the cavity of the uterus, or the cervical canal, is cauterised with a 10 per cent. solution of carbolic acid, in order to destroy any infectious germs that may be present. The denuded surfaces (of the stump) are first united in the depth near to the mucous membrane of the uterus; these sutures are covered up by several rows of other sutures, uniting the walls of the stump; finally, the peritoneum is pulled over the stump, and attached to it and to the peritoneum on the other side by a line of closely placed stitches. On the sides of the stump, at the spots on which the large blood vessels have been divided, the tissues are firmly fastened to the stump by a separate deep suture. After removal of the indiarubber ligature, the stump is seen with a smooth covering of peritoneum, united by a neat row of sutures." Of sixty-six patients on whom he had operated, he had lost twenty (30 per cent.); of his last forty cases, he had only lost nine.

Schroeder also tells how he modifies his operation in the removal of intraligamentary tumours—tumours which at this time were considered inoperable by most surgeons. He also, in this paper, describes how he practised myomectomy in the case of a very large fibroid growing in the posterior lip of the cervix. He, in fact, demonstrated that it was possible to remove by enucleation and with the elastic ligature any fibroid tumour.

Dr. Macdonald, in his remarks on his two cases of hysterectomy, discusses the possibility of oophorectomy as an alternate operation for arresting the growth of the tumours, pointing out that in each of his cases it would have been impossible to remove both ovaries.

At this time the operations of oophorectomy, originally introduced by Battey, and those for the removal of the uterine appendages introduced by Tait, were being practised with the object of diminishing the size of the growths and of establishing the menopause. Tait had not yet mastered the technique of hysterectomy. In a personal communication to Dr. Bigelow, of Washington, in 1882, he says: "So far, removal of myomata by laparotomy has not been a successful operation. I think I have done about thirty cases with about ten deaths; this is rather over than under the mark. The best results have been with the clamp, the worst with the ligature. When they are small I remove the appendages, and they do beautifully. When they are big I remove them, and when they have a decent pedicle they do very well; when they have not they die from hæmorrhage." So, three years later, Tait publishes a list of fifty-eight cases in which he had removed the uterine appendages for myoma without a single death. He gives details of fifty cases, and claims to have had failure in only two instances. He condemns hysterectomy generally, but adds that there are some "cases in which the performance of the operation of removal of the uterine appendages does not arrest the growth of the tumour, and these cases must subsequently demand the greater operation. Other cases will also demand it when the tumour has grown after the menopause; in such, of course, removal of the appendages being altogether out of the question. But what I contend for is this, that if the removal of the appendages were performed early in the history of these cases," *i.e.* when they are small, "as it ought to be, very few would arrive at the necessity for the operation of hysterectomy."

The operation, as Tait pointed out, was especially applicable to small tumours. In these cases the appendages were accessible, and could with certainty be completely removed. Another class of cases were those tumours which grew between the layers of the broad ligament, because at this time their removal by hysterectomy was almost always followed by a fatal result.

But to return to the pedicle, in which the whole subsequent history of hysterectomy centres, we had in 1883 two methods of treatment—the extraperitoneal, by serré-nœud, clamp, or elastic ligature; and the intraperitoneal, as advocated by Schroeder. The results as to mortality were greatly in favour of the extraperitoneal method. Sepsis was the chief cause of death in both methods. The indications for operation were the same in both, namely, in cases where the tumour threatened the life of the patient or caused great suffering.

The interval from this time on till 1889, when a safe method of treating the stump intraperitoneally was discovered, may be called the transition period, in which various devices were tried in treating the stump without wire or clamp, and in such a way as to be secure from hæmorrhage. Kelly, in 1888, after treating the stump according to Schroeder's method, fixed it in the abdominal wound, and then stitched the parietal peritoneum round it. The stump was thus fixed extraperitoneally, and any bleeding or discharge from it was easily observed. His results were good. Polk about the same time introduced a method similar in principle to Kelly's. In 1889, Byford read a paper on a new method of treating the stump in abdominal hysterectomy. The method consisted in sewing up the stump somewhat after Schroeder's plan, separating the bladder from the uterus, opening the anterior fornix, turning the stump into the vagina, and fixing it there by a pedicle pin introduced from the vaginal side. Up to this period, operators placed great importance on the vascularity of the uterine tissue. The principal danger of the operation was accounted to be that of primary or secondary hæmorrhage from the stump, hence the temporary use of the elastic ligature, and the effort made to ligate every particle of tissue in the broad ligaments.

Stimson of New York, in 1889, demonstrated that by tying off the two uterine and the two ovarian arteries, complete hæmostasis of the uterus was effected. He showed the practicability of this method in performing panhysterectomy, and suggested that it should be applied to the operation of supravaginal hysterectomy.

At a meeting of the British Gynæcological Society, held on February 26, 1890, Dr. Reeves mentioned that he had removed a tumour which extended above the umbilicus. After tying the broad ligament, he tied each uterine artery separately, and treated the stump after the intraperitoneal method. He destroyed the cervical canal by means of Paquelin's cautery, but did not cover it over with peritoneum. Milton, in January 1890, performed his first operation of supravaginal hysterectomy. The steps of the operation, as narrated by him, are nearly identical with those performed at the present time, and his description might serve in any modern text-book to teach one the technique of our present day operation. He ligated the ovarian vessels on both sides, divided the peritoneum anteriorly and pushed it down with the bladder; he then made a posterior peritoneal flap, after which he tied the uterine arteries separately, and then divided the cervix transversely; lastly, he united the peritoneal flaps over the stump. In a paper in the *Lancet* of November 1900, he narrates three more cases similarly treated, and I think he must justly claim to have been the first to perform and describe the perfected operation of supravaginal hysterectomy. Baer's first operation was performed on October 2, 1891, and though it differed slightly in technique, its principles are the same as those of Milton's.

In 1896, Kelly introduced his side-to-side method of amputation, making the removal of intraligamentous tumours an easy matter, and adding the finishing touch to an operation which may, technically at least, be considered perfect.

This story of the stump illustrates, perhaps better than anything else, the progress of operative gynæcology during the last twenty years.

In its evolution many able men have taken part, and many lives have been lost. From methods crude and difficult there has evolved one of great simplicity. The simplicity and effectiveness of the method have made the operation as easy as ovariotomy, and given to it as small a mortality. It has brought the removal of all fibroid tumours, however complicated in their relation, within the range of practicability. The revolution in the process of evolution was the recognition of the fact that ligature of the uterine arteries stopped bleeding from the stump. Some of the earlier operators tied these vessels, but had not confidence in the results, and used additional means.

While this operation is one of which all those who have had any share in bringing it to perfection may be justly proud, the very success with which it has been crowned should make us pause and ask ourselves—Does not the simplicity and safety of this operation bring with it some danger? May we not be misled and tempted by the skill and facility with which this method enables us to remove the uterus? Will it not tempt us to remove the uterus sometimes when it is unnecessary to do so? I fear this danger is not imaginary, that it is one we must always be on our guard against, while we must never forget that the successful removal of an organ is not always a triumph of art, but sometimes a confession of defeat.

This important question leads us to consider the position in which we now stand in regard to major operations, not only on the uterus, but also on other organs. This radical operation of supravaginal hysterectomy, beautiful and simple though it be, is not the operation of election for fibromyomata, but is only the alternative when the conservative operation of myomectomy is impracticable. Myomectomy, which is the enucleation of a fibroid tumour without sacrificing the uterus, is the ideal operation for fibroids, and it is the duty of the operator to enlarge the indications for it, and to narrow those for the radical operation. And, to reach this end, it would make an interesting and useful research if those of us who have removed a number of tumours by supravaginal hysterectomy would dissect them carefully, and see how many of them might have been treated by myomectomy. It aims at removing the disease while conserving the functions; therefore it is important that it should be carried out whenever practicable in women during the child-bearing period. In the case of women who are well over 40, and in that of a tumour which has attained the size of a six months' pregnancy, supravaginal hysterectomy is to be preferred. But if myomectomy is to succeed as it deserves, tumours must be recognised early—while they are yet small; and as years ago we heard the cry, "a plea for early ovariotomy," so it is possible that, at an early date, we may hear a similar cry for early myomectomy.

There is no more interesting subject than the future treatment of fibroids. Twenty years at least have been spent in perfecting the operation of supravaginal hysterectomy. Will the operation, twenty years hence, be abolished, and will such an operation as myomectomy reign supreme? My successor in this chair twenty years hence will be able to answer the question.

The aim of the early operators was to conserve life by removing conditions which endangered life: later, indications were extended to include those conditions which, though not threatening life, interfered with the comfort and well-being of the patient, and now the operator endeavours to remove the sufferings of the patient, to conserve not only her life, but also the functions of the organs operated on.

The affections of the tubes and ovaries lend themselves to the carrying out of this the highest ideal of surgery, and the important functions which they perform make conservatism very desirable. The ovaries are of paramount importance, as on them depend ovulation and menstruation, while without them the tubes and uterus are useless. The ovaries, in addition, secrete a substance which is believed to be of importance for metabolism and for the maintenance of nervous equilibrium. To you, I need not say how desirable it is, especially in young women, to preserve these functions wherever possible. You know as well as I do how much the wellbeing and happiness of a woman depend on the healthy performance of her peculiar functions, and you are all familiar with the severe nervous disturbances and extreme physical discomfort which in some instances follow the artificially induced menopause.

Fortunately, the ovarian functions can be conserved, and such calamitous conditions averted, by the preservation of a small piece of sound ovarian tissue; and this can be accomplished in the majority of cases of ovarian disease.

The function of the tube is that of a carrier of the ova, and is of importance only where the question of the possibility of conception is concerned. The tube is a delicate structure, and its function may be easily interfered with. It is, however, amenable to conservative treatment; and such operations as separating adhesions, making a new ostium in a closed tube, and resecting diseased tubes, have frequently been performed with good results.

Before leaving this subject, I might briefly refer to a further advance which has been attempted in conservatism, in what is known as ovarian grafting. I cannot do better than quote Morris of New York, who is doing good experimental work in this line. "If, for instance, in a case of pyosalpinx, we are obliged to remove the ovaries and oviducts *en masse*, as often occurs, we can place part of a fairly good ovary in warm saline solution, until the rest of the work is completed, and then graft this piece of ovary partly beneath the peritoneum, at some point near its original site, before closing the abdomen. The ovarian graft will be the means of preventing a precipitate menopause, the patient will continue to menstruate, and there is a possibility of pregnancy occurring if the stumps of the oviduct remain patent, as they commonly do after absorption of catgut ligatures. This refers chiefly to grafting in a piece of the patient's own ovary. If she receives a graft from another patient, operated upon at the same time for the purpose, the patient may continue to menstruate for some months, and to have the benefit of internal ovarian secretion. It may even be possible for her to become pregnant, before the graft has degenerated, but this has occurred as yet only in rabbits, and very shortly after the grafts were introduced." He says further: "I wish simply to impress the idea that we are to graft back a part of a woman's ovary, whenever this can be done safely, in cases in which the loss of all ovarian tissue would be a misfortune."

I might also mention a method which indicates another step in the same direction, namely, the intra-uterine implantation of ovarian tissue. This procedure consists in making an incision in the fundus of the uterus, preparing a place on its inner surface for the reception of the ovary, or portion of ovary, and fastening it there with deep and superficial stitches. Palmer reports that after forty-eight implantations which he had been able to follow, twenty-eight had become pregnant, and of these twenty-five went to term.

I have said enough about conservatism to indicate to you that, in my opinion, it is in pursuit of it that our efforts must be directed in the future. We must apply its principles to all operations which admit of it. Many cases are not suitable for it, and in some the more radical the operation the more real is the conservatism; but wherever possible, our aim should be to remove the diseased tissue and to leave whatever is sound.

I am well aware that the reports of conservatism in adnexal disease are not so encouraging as we would like. In a minority of cases where one ovary or a portion of an ovary has been left behind, pain persists, but a proportion quite as large has been found to suffer after complete removal of the appendages. In about 5 per cent. of cases the disease has recurred, and operators have been obliged to re-open the abdomen to effect a cure. This is perhaps the most serious objection; but I think the recurrence in these cases is due more to faulty method than to the principle of conservatism. With increased experience and further improvement in technique, we may fain hope that even these disappointments will no longer be experienced.

In all cases where the surgeon thinks of carrying out conservative procedures, he should take the patient into his confidence, and let her decide whether or not she wishes him, even at the risk of a second operation, to attempt to save what he can.

In our Society it is only to be expected that the training of our students in obstetrics and gynæcology should frequently be referred to in addresses from the chair. The importance of the subject is vital, and it is incumbent on us that we should not only be interested in the matter, but should take an active part in whatever makes for its improvement. The suggestions from this chair, on former occasions, have already borne good fruit. We all rejoice to think that, through the exertions of some of our Fellows, our students have now facilities for obtaining satisfactory instruction in practical obstetrics. We all rejoice and are thankful for the institution which has recently been acquired for the purpose, and dedicated to the memory of our beloved Milne Murray. The teaching of our students was a subject ever near his heart, and no more fitting memorial could have been thought of. For his sake, and for the sake of the work, our Fellows will always guard the Milne Murray Lodge with zealous and loving care.

While the teaching of practical obstetrics has now received adequate attention, it is our duty to turn to the subject of practical gynæcology, and see if something cannot be suggested whereby the teaching of this important branch would be improved.

We may consider the subject from two aspects—First, from the aspect of the student who is to become a general practitioner: secondly, from the aspect of the man who aims at being a specialist.

It is with the first class that we are chiefly concerned.

I do not think our students will leave the university endowed with a knowledge of practical gynæcology, until attendance on a course of clinical gynæcology is made compulsory, and each student is examined on the subject in his final examination. The methods adopted in the teaching of clinical medicine and clinical surgery might be applied to those of clinical gynæcology. I see no reason why two students should not be attached to each gynæcological bed, as is practised in the medical and surgical wards. During the session each student should have had an opportunity of becoming familiar with a variety of diseases, and with the additional instruction he receives at cliniques and in the operation theatre, he should in six months have a fair knowledge of practical gynæcology. I know the objection will occur to some, that patients would not like this arrangement. I think otherwise. In my dispensary practice, the number of patients who attended was as large when I had students as when I had not, and I have noticed in the wards that patients are rather pleased that students should interest themselves in their cases.

The training of a man who aims at being a specialist is altogether different. It is a post-graduate undertaking, and depends entirely on the ambition and efforts of the man himself.

His course of instruction must essentially be, primarily, that of a general surgeon. I fear that major gynæcology may ultimately pass into the hands of the general surgeon, if our young gynæcologists are not careful to insure themselves with a thorough surgical training against this danger.

When a gynæcologist opens the abdomen, to remove an ovarian or a uterine tumour, he should feel himself qualified to deal with any complication that is present, such as a resection of the bowel. If I might indicate the course which a young gynæcologist might follow, I would recommend him first to spend some months as a demonstrator in the anatomical rooms; then to undertake the duties of a house surgeon in general surgical wards, and also in the maternity hospital, before he becomes a house surgeon in the gynæcological wards. If he chooses the lot of a gynæcological surgeon, he will have a life of exceptional anxiety, neutralised, however, by much satisfaction. His aim should be to do good work and to do it well; his prayer should be to be delivered from vanity and carelessness; and when reverses come, as come they must, he will

"Rise from disaster and defeats the stronger."

SOME OBSERVATIONS ON ANÆSTHETIC MIXTURES AND SEQUENCES IN GENERAL ANÆSTHESIA.

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The practical study of anæsthetics has of late years attracted the attention of a number of observers in all branches of our profession to a very large degree, and, judging from the abundance of literature now existing and daily increasing, the importance of the subject is becoming fully recognised, and is thus receiving the amount of consideration of which it is worthy.

It is difficult to open any of our professional periodicals without finding some reference to the subject of anæsthetics. At one time it is to record investigations and report on a new narcotic drug, or some other method for the administration of one of the longer established narcotics. At another, a new inhaler is brought forward claiming some special feature of advantage; or perhaps—and this is more often—a modification of one that has been in use for some time.

This paper is written with the object of directing the attention of the general practitioner to some of the advantages of the more important anæsthetic mixtures and sequences now in common use, with the hope that it may encourage some to go a little further in a direction not quite so much trodden, but nevertheless of considerable purport, concerning as it does the safety of the patient as well as the convenience of the operator, and thus helping in an appreciable measure to the success of the surgical procedure.

Moreover, any one who cares to give time and study to this important branch of our profession will be pleased to find it of growing interest, and, with increasing knowledge and experience, will discover as his reward the administration of anæsthetics to be no longer a drudgery or a dread, but, on the contrary, each case will be at once a problem, a scientific study, opening up abundant scope in a new field for clinical observation.

How often the writer has been asked the question, "Do you not find giving anæsthetics rather monotonous?" and his reply is, "No, far from it." The following remarks may serve to show why.

As our knowledge increases in regard to the physiology of the various agents we have at our disposal, as the great mass of clinical records accumulate, so we find it less difficult to decide the question as to the choice of a suitable anæsthetic for any individual case.

A few years back the relative values of ether and chloroform in surgery, and their respective safety, caused the keenest debates, and was the subject of much controversy. On looking back, we must fully acknowledge that much valuable information was disseminated, but we also now see that the question of ether *versus* chloroform was fought on a wrong basis altogether.

Of later years the old controversy has lost much of its supposed importance; for a larger experience, carefully recorded statistics—extending over a number of years—and the published work of thoughtful observers, have done much to clear the ground before us, and to bring to light the all-important fact that it is neither necessary nor desirable that we should confine ourselves to the use of any one anæsthetic agent, to the exclusion of all others; that they each have their respective sphere of utility, and often a mixture of some, or the administration of one in succession, is of great value in certain cases.

In short, to insure success in inducing and maintaining general anæsthesia, we must vary our anæsthetic, or our methods of using it, according to the exigencies of the case with which we have to deal. Dr. J. F. Silk, in a discussion on recent methods of inducing anæsthesia, referred to the three stages in the use of anæsthetics, beginning with the elementary stage, which lasted until 1890, when the patient dreaded the anæsthetist more than the surgeon; the second stage, during which anæsthetics were divided into two rival camps of chloroform and ether: and the present stage, when they had recognised definitely that these were not the only anæsthetics, and that the true art of the anæsthetist did not lie in pinning his faith to any one anæsthetic, but in adapting it to the particular patient. More than this, he could, with advantage, change the anæsthetic to suit the same patient at different stages of the same operation. The history of anæsthetics is full of interest to all, be he surgeon, general practitioner, or dentist. If there is one thing that would strike us in perusing the history of those pioneers of medical science who have handed down to posterity the priceless blessing of anæsthesia, and from which we can learn a lesson, it is this—never to rest content that we have arrived at finality in the general efficacy of an anæsthetic agent.

Had Simpson been content with ether, as administered in 1846, why did he cast about in search of another anæsthetic agent, resulting in his discovery of the anæsthetic properties of chloroform.

Again, had Clover been satisfied with chloroform, and seen no serious objection to the method employed in the early seventies to administer ether, we should perhaps not have had the advantage of his portable regulating ether inhaler which has perpetuated his name, and also his apparatus (and method), by means of which nitrous oxide can be given as a preliminary to ether.

On the score of humanity, is it not, indeed, a great thing to be able to rapidly and safely plunge our patient into temporary "forgetfulness," to render him unconscious of his surroundings in a few seconds, and ready for the surgical procedure in about three minutes? That this is possible to us is through the demonstration of the principles laid down by Clover.

Were these early pioneers of anæsthesia to come amongst us to-day, I think they would see much that would interest them, and I make bold to assert that the heritage they left has not been permitted to lie idle, but the spirit of enterprise and research, shown by them to such a marked degree, has not entirely departed; on the contrary, many, stimulated by their successes and at the same time cautioned by some shortcomings, have gone on with the work where they left off, and will continue to do so in this as in other branches of progressive medical science.

If we were in possession of a perfect anæsthetic agent, there would be quite a different state of affairs to that which exists at present. On the other hand, we may be thankful that there are quite a number of members of the therapeutic group known as general anæsthetics; and further, we have at our disposal, in addition to the usual agents, so many mixtures, succession of mixtures, methods of administration, and systems, that it is far easier than it formerly was to successfully treat those difficult and exceptional cases which from time to time appear; and, provided of course the anæsthetist is competent, anæsthesia may be maintained after a satisfactory induction, with a minimum of discomfort to the patient and with practically no risk to life. We must not lose sight of the fact that, besides the comfort and safety of the patient, modern surgery is more exacting on the powers of the anæsthetist, requiring on his part a further extension in the field of practical anæsthetics, and necessitating a considerable broadening of ideas. For instance, he who uses chloroform largely will doubtless be able to record cases in which a condition of circulatory and respiratory depression—not due to an over-dose —which may have occurred either before, during, or after the operation of a disconcerting, if not alarming, nature; and doubtless the symptoms could have been avoided in many instances had ether been given, and, generally speaking, are best treated, when they arise during the course of an operation, by changing to a mixture of chloroform and ether, in varying proportions, or to ether alone.

Again, the practitioner who holds the opinion that ether should be given in every instance in which an anæsthetic is required, must have come across a certain number of cases which were troublesome to manage on account of an excessive amount of secretion from the buccal and respiratory membranes, leading to obstructed breathing and all its attendant inconveniences, not to mention dangers. By changing to chloroform or a mixture of chloroform and ether, after the mucus has been removed, a satisfactory anæsthesia continues for the rest of the operation.

Caution is necessary in the changing from ether to chloroform, under the circumstances mentioned above, and a little practice is required to make the transition smooth, but such a change is the only thing possible under the circumstances.

Of the anæsthetic mixtures there are quite a number, and it would be beyond the compass of this paper were I to attempt to enumerate and describe them all, but the following are of importance enough to mention. The most commonly known is that going by the name of the A.C.E. mixture; it is composed of alcohol 1 part, chloroform 2 parts, and ether 3 parts. It was long regarded as the best of its kind for general use, but latterly the alcohol has been left out and a mixture of 2 parts of chloroform and 3 of ether is perhaps better. Also, owing to the mask not becoming saturated with alcohol, it is more convenient than the A.C.E. mixture. It is especially indicated in cases of advanced cardiac disease, in cases of peritonitis, intestinal obstruction with a rigid and distended abdomen, and consequent respiratory embarrassment. I prefer it to anything else in cases of chronic bronchitis, and emphysema, with consequent dilated and fatty hearts. Old persons and the obese take it very well. In a word, this mixture is the best anæsthetic to use in cases generally considered unfit for chloroform on the one hand and ether on the other. Hewitt states that he gets better results from this C.E. mixture than from A.C.E. " There is less excitement during the administration, and a more satisfactory recovery afterwards, differences which are probably dependent upon the absence of the alcohol."

The symptoms of a patient under C.E. or A.C.E. are very much the same as those under chloroform, with the following general exceptions. There is perhaps a little more saliva and mucus secreted, the patient takes rather longer to go under, the pupil is a little larger, and, most important of all, the pulse is generally speaking better than that of a patient under chloroform alone, and the respiration is deeper and more audible. It is best given by means of some form of Rendle's inhaler, especially if the patient is an adult. In the case of a powerful male, it may be impossible to induce anæsthesia if lint or a Skinner's mask is used. I prefer C.E. mixture in midwifery cases to pure chloroform, as it has less tendency to diminish the pains—the analgesia is just as good; but in cases in which deep anæsthesia is required, I always prefer ether preceded by nitrous oxide or chloride of ethyl. One part of chloroform to 2 parts of ether is not such a good proportion, as it parts with its ether rapidly and its chloroform slowly. The same remark applies to what is known as the "Vienna mixture." A higher percentage of ether, 4 parts to 1 of chloroform, was examined by the committee of the

Royal Medico-Chirurgical Society, and was reported to be very similar in its action to ether alone.

A mixture of chloroform and ethylic alcohol in equal parts is a specially useful anæsthetic for infants and young children, as the alcohol restrains the volatility of the chloroform, thus preventing too concentrated a vapour; it is therefore, in a sense, safer than chloroform given alone, especially in the hands of the inexperienced.

Billroth's mixture is in favour with many continental surgeons: it consists of 1 part of alcohol, 3 of chloroform, and 1 of ether.

It is generally admitted that A.C.E. is safer than chloroform, and we would naturally argue that the danger of the various mixtures of these drugs rise in proportion to the amount of chloroform in any individual mixture.

Nitrous oxide gas and ether in mixture is now largely employed in dental practice and short surgical operations, in the place of chloroform, on account of its far greater safety, the rapidity with which the patient is rendered unconscious; the quick recovery enabling him to go about his work almost at once, and the comparative absence of after-effects.

Dr. W. Guy, Dental Surgeon to the Royal Infirmary, Edinburgh, is a strong advocate of this mixture for dental cases, in which an available anæsthesia is procurable of one minute to two and a half minutes after the anæsthetic is withdrawn; and it is partly through his publishing carefully recorded cases and describing the system in the *Edinburgh Hospital Reports*, and also the teaching of the method to students, that it has largely supplanted the more lethal drug, chloroform. In this relation it will be of interest to note the anæsthetics used at the Incorporated Edinburgh Dental Hospital and School during the following years:—

	1897.	1898.	1899.	1900.	1901.	1902.
Chloroform .	290	293	168	78	61	15
Ether and gas	0	46	447	585	1741	2506

No accident with gas and ether has occurred during these six years, and none at the dental department of the Royal Infirmary: there are about 1200 operations, under anæsthetics, in this department every year; chloroform is not used at all, the object of the surgeon in charge being to demonstrate that its use in dental surgery is never necessary.

During eight and a half years, a pair of tongue forceps or artery forceps, to draw forward the tongue, has never been used.[1] I have been a fairly regular attendant in this latter department both as an observer, an administrator and demonstrator, and from what I have seen of the work of others feel that much practical information can here be learned by those who care to pay the department a visit.

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[1] *Lancet*, London, November 7, 1900.

I have used this mixture for many years, and have always been struck by its advantages, increasing experience having confirmed my good opinion of it.

For some time past I have been using a mixture of chloride of ethyl with ether, in the same way, and for the same purposes, as the older gas and ether mixture. It is a most excellent mixture, from all points, and I have not, up to now, had reason to complain of it either from a point of safety or from any other reason. Compared with gas and ether mixture, it certainly has some advantages over it.

The patient loses consciousness quicker, a point in its favour especially in nervous patients. There is little or no duskiness of the face, less congestion, old people and children take it better, and the apparatus is simpler and more handy to manage. No further apparatus than an ordinary Clover with tap, in angle mount and glass measure tube, is required, as described by myself in the *British Medical Journal* of April 23rd of last year. It is a great comfort to the administrator not to have to carry about heavy gas bottles, inconvenient enough in a town, but of course more so in country practice. It must be recorded, however, that there is more muscular rigidity than under gas and ether. Much has been written lately concerning nitrous oxide gas mixed with ethyl chloride or somnoform. Dr. Guy and myself have made a number of careful records on the above mixtures, which we hope to publish at a future date.

We find the best results are obtained when using a small bag of 1 gallon capacity. Roughly speaking, the results are as follows: With a dose of 1 gallon of gas and 3 c.c. of chloride of ethyl—Time of gas administration—re-breathing from the first, ten to fifteen seconds; and the mixture, forty-five seconds—available anæsthesia, sixty to ninety seconds. Gas and somnoform—Dose, 1 gallon of gas and 4 c.c. somnoform. Time of gas administration—rebreathing, ten to fifteen seconds; mixture, thirty seconds; available anæsthesia, sixty to ninety seconds. It will be seen that this mixture is better than gas, so far as the length of time the patient remains under is concerned, after the mask is removed. A longer anæsthesia can be procured by using more chloride of ethyl or somnoform.

These mixtures have their definite sphere of usefulness. They are especially suitable in highly nervous cases, in which a longer anæsthesia than gas can give is required, but not so long as that of ether pushed to its surgical stage.

The object of beginning with nitrous oxide is to prevent the slightest smell of chloride of ethyl being noticed, which, although of little or no moment to an ordinary patient, might be upsetting to one of a highly strung temperament. For routine work I much prefer chloride of ethyl alone; patients appear to go under more rapidly, the anæsthesia is deeper and longer, with a prolonged analgesia.

Although not actually a mixture of anæsthetics, the employment of oxygen in conjunction with nitrous oxide, ether, and with C.E. or chloroform, is of such interes tthat a few remarks on the subject may not be out of place here.

Gas and oxygen is the safest anæsthetic known for short operations, there never having been a death recorded from it; and this is more remarkable, seeing that it is often the chosen anæsthetic in preference to nitrous oxide in certain anxious cases, such as advanced cardiac disease. When properly given to a suitable case, the patient's condition is more like natural sleep than under any other anæsthetic. It must be remembered that the anæsthesia is comparatively light, so that it is hardly to be recommended for surgical operations in which any reflex movements on the part of the patient would be inconvenient to the operator. If given continuously, it is by no means free from after-effects, and some care is required in selecting the type of subject suitable. Seeing that the apparatus required for its administration is rather complicated and expensive, requiring considerable practice to manipulate, it is not surprising that it is rarely to be found in the hands of the general practitioner, and it is not now so often used by the professed anæsthetist. The many advantages of chloride of ethyl are more and more being recognised, and this drug will in all probability soon supplant the gas and oxygen combination to a large extent, this latter being reserved for very exceptional cases only.

Ether, or C.E. with oxygen gas, is at times a valuable combination. For instance, bad cases of pleuro-pneumonia or empyema, in which the condition of the circulation and respiration are so highly unsatisfactory that the depressing action of chloroform alone has its special dangers. The C.E. is then best administered by a Rendle's mask, whilst a stream of oxygen is directed into the inhaler by means of a rubber tube from the oxygen cylinder. I would suggest it in extreme cases of intestinal obstruction, with distended abdomen, frequent and feeble pulse, and dusky extremities. Such cases are the most hazardous to anæsthetise, and it is often a question as to whether a general anæsthetic is justifiable.

The patient is, however, often fully conscious of his surroundings, and keenly sensitive to pain, although his life hangs on a thread. In ether we have the powerful stimulant, which is so desirable in these cases; and the oxygen, by reducing the rapid breathing, would conserve the output of his nervous and muscular energy.

Chloroform and oxygen was introduced by Neudorfer of Vienna, who is reported to have given the mixture by means of a tight-fitting face-piece, excluding all atmospheric air.

Another method is to attach to the hand-bellows of a yunker inhaler a bag containing oxygen, so that the gas, instead of atmospheric air, is pumped through the chloroform. In one particular case I was fully satisfied with its good effect. The operation was for the removal of a large goitre, extending into the mediastinum, and causing a considerable amount of stridor and hampered breathing.

The patient, a female, æt. 42, pulse about 140 and very feeble, slightly dusky about the ears and lips. I commenced with C.E., administered very gradually, and she passed quietly into the third stage with only an occasional cough and slight crowing breathing. Just when the corneal reflex had vanished, the operation was begun. Under the circumstances I decided to keep as light an anæsthesia as possible. Gradually the duskiness increased, accompanied later by loss of tone in the eyelids, sweating over the forehead, and a quicker pulse. The necessary manipulations of the surgeon produced a further impediment to the respiration. I tried lighter anæsthesia, permitted a lid reflex, a small and active pupil, and occasional phonation. I employed a Rendle's mask, with the sponge removed, using chloroform alone sparingly, a few drops at a time, and directing a stream of oxygen into the inhaler. The breathing at once became less laboured, the colour improved, and, in short, the general condition was much more satisfactory. The chloroform was kept up until the tumour was removed, when I returned to the C.E. mixture ; as the pressure on the trachea was removed, I could again place the patient more deeply under. She made a good recovery.

This again is an exceptional case, but I record it to illustrate the beneficial effect of oxygen with chloroform to one in an unsatisfactory condition for any anæsthetic.

Of the anæsthetic sequences there is a large field for choice, and of course a little experience is required in making a correct selection for each individual case. Some are in constant use, and have been so for years, others less frequent, and again a few are reserved for rarer occasions. What is the object in view in inducing anæsthesia with one agent, and keeping it up for the rest of the operation with another? Why should we like, in some cases, to employ two anæsthetics in succession for the induction period, and then change to a third for the subsequent stage of the administration? And, finally, why is it considered advisable in another group of cases to select certain of the mixtures described above, before or after, one of the simple anæsthetics, as ether or chloroform. To fully answer all these questions would take up too much space, but an answer to a few will be found in the following short description of some of the more important sequences, leaving fuller details to be sought in some of the standard works devoted entirely to the practical study of anæsthetics.

For the same reason no attempt is given to present to the reader details in the methods of administration, most of which are fully described in Dr. F. W. Hewitt's book, "Anæsthetics and their

Administration." Those sequences in more or less general use are as follows:—

The nitrous oxide–ether sequence.
The ethyl chloride–ether sequence.
The A.C.E. (or C.E.)–ether sequence.
The ether–chloroform sequence.
The nitrous oxide–ether–chloroform sequence.
The A.C.E. (or C.E.)–ether–chloroform sequence.
The A.C.E.–chloroform sequence.
The ethyl chloride–chloroform sequence.
The chloroform–ether–chloroform sequence.
The chloride of ethyl–ether–chloroform sequence.

There should, indeed, be no complaint that the choice of anæsthetic sequences at our disposal is not large enough.

The nitrous oxide-ether sequence is so well known that it would seem almost impertinence on my part to draw attention to it. It is the oldest and at present most generally used of all sequences, and is with a large number of practitioners their anæsthetic of routine use. I have used it extensively for the last fifteen years with satisfactory results. The very great safety of nitrous oxide gas has never been called in question, so that it is on this score particularly appropriate for inducing anæsthesia. It is not unpleasant to take, as it is almost odourless, it rapidly produces loss of consciousness, and thus the smell and initial sensations of ether narcosis are avoided. In a word, this sequence is the safest, quickest, and most comfortable form in which to anæsthetise the majority of patients.

This is saying a good deal, but it must be remembered that considerable experience is necessary before an efficient administration can be conducted, and it is by no means applicable to every class of patient or to every surgical procedure.

It is a fact full of significance that, whereas most of the fatalities under chloroform have occurred either at the very outset of its administration or during the stage of excitement and tonic spasm, before, of course, surgical anæsthesia is arrived at, and not at all infrequently in perfectly healthy subjects, it is not so with gas and ether, neither has a death been recorded under the ethyl chloride-ether sequence. This is hardly surprising, seeing the greater relative safety of the three anæsthetics just mentioned over that of chloroform.

I do not wish for one moment to decry chloroform—far from it: it is indispensable to the anæsthetist, and most surgeons will admit it is the nicest to operate under.

The advantages of ethyl chloride-ether sequence are practical ones, and thus deserve attention.

For reasons which physiologists will explain, there are very few of the asphyxial symptoms shown when this drug is administered in the place of nitrous oxide gas. There is not the blueness and duskiness of the features, neither is there the same amount of congestion of the tongue and upper air passages. The patient goes under rather quicker; and, further, the apparatus is less cumbersome and easier to work.

To take another instance, namely, the C.E., A.C.E., or chloroform-ether sequence. This is a very excellent succession, and is to be specially recommended in country practice and in the colonies, where gas is difficult to procure and very expensive. Taking it as an established fact that the danger of chloroform anæsthesia (and in a lesser degree C.E. or A.C.E.) is mostly during the excitement stage, it would seem strange that it should ever be recommended as a preliminary to ether. But, on looking into the matter a little more closely, the way out of the difficulty is obvious. The patient is not given chloroform, or the mixtures, up to the dangerous stage, but just short of it, and then the charged Clover inhaler replaces the chloroform mask, or, in the case of C.E. or A.C.E., the Rendle's mask. The main object of the preliminary exhibition of the above-mentioned agents is to blunt the sensibility of the patient to the pungent vapour of ether, and also in certain patients who do not like the idea of a closely fitting face-piece. There are some patients who do not take the gas and ether sequence well—as, for instance, tall muscular men, alcoholics, etc., and here this sequence shows advantage. Statistics show this sequence to be safe, and it is safer than chloroform alone. Of course, it may be argued that, as far as statistics are concerned, the reverse could possibly be shown; but, as in other branches of our profession, the carefully recorded results of hospital and private work are accepted as evidence, if extending over a long period and comprising a sufficient number of cases. Conversely, if we do not record our cases and take notes both in hospital work and in private, how are we to make deductions or gain advantage from our experiences?

In prolonged administrations, it is not recommended to continue ether inhalation for the whole time. For reasons given above, it is desirable to begin with either gas and ether, or chloride of ethyl and ether, and later to continue with chloroform or C.E. In anæsthesia conducted in this way it is found that there is less trouble with the mucous and salivary secretions; there is less tendency to muscular rigidity; the breathing is quieter, and the expenditure of nerve energy is conserved, so that there is less tax on the vital powers. Should stimulation be required, as the result of surgical shock or the depressing influence of chloroform, ether can again be resorted to, not by subcutaneous injection, but by maintaining anæsthesia with it.

Take, for instance, the case of a weakly child, who has been bedridden for months, suffering from advanced tuberculous disease of the hip-joint. The surgeon, having tried all in his power to save the limb with no success, decides to amputate at the hip-joint.

The anæsthetist will select an anæsthetic that will put the little sufferer under as quickly as possible, in order to save an exhausting period of excitement with struggling. Children do not take nitrous oxide well, so chloride of ethyl is selected. During the early stage of the operation, there is surgical shock to be feared. This is undoubtedly best obviated by continuing with ether by means of a Clover inhaler. Later in the operation, when anæsthesia can be lightened, C.E. or chloroform will be found best. This procedure was recently conducted in a particularly anxious case, with entirely good results, and is an example of a succession of sequences, each with a special object in view.

Recognising the danger of initial chloroform anæsthesia, F. T. Paul of Liverpool begins with a little chloroform, and gives a full dose of ether just before the stage of rigidity, and subsequently resumes chloroform. This would be called the chloroform-ether-chloroform sequence, and, as would be expected, the results are very satisfactory.

Now that the indications for the use of anæsthetic mixtures and sequences have formulated themselves into certain definite lines, following, as the result of carefully thought-out theories, and confirmed by a vast amount of practical experience, it is hardly surprising that the sphere of usefulness of anæsthesia has extended to a degree that could not have been foreseen by the early workers, and which is capable of keeping pace with the advances and requirements of modern surgery.

In pursuance of the study of anæsthetics as now in vogue, from the pages of recent text-books, much can be gleaned to throw fresh light on the subject. How interesting this subject is can only be known by those who care to devote time to it, from a practical point of view. Nothing but practice will train the hands, eyes, and ears of the administrator in accurate co-ordination, and his mind, such as will enable him to concentrate his attention to that extent, as will at once, almost instinctively, respond to any slight deviation from the normal in his patient, and as quickly to treat any attendant evil as will at times present itself.

The employment of mixtures and sequences is a comparatively recent development in the practice of anæsthesia, and, following in the line of many new ideas, it is not surprising to learn that, when introduced and advocated, it was met by adverse criticism, and even opposition, to an extent which, on looking back, is rather astonishing. Perhaps enough has been said to show that what has been called "the field of view of the anæsthetist" is a wide one, an extending one, and full of interest. It has taken some years to develop—like all other branches of our profession—but it is all the sounder and better for that.

It is obvious that he who confines himself to the use of only one anæsthetic, be it what it may, to the exclusion of all others, cannot be in a fair position to form an opinion, or judge of the respective merits of the rest, for it is only natural that he would be biassed in favour of that agent with which he is familiar; hence, unless something startling happens, he is content to go on in the old way. The choice of an anæsthetic, taken in its wider sense, does not concern him: he is satisfied with the "knowledge" of past generations.

In general surgical work this should not be, for is it not true that "each age refutes much which a previous age believed, and all things human wax old and vanish away to make room for new developments, new ideas, new possibilities"?

In pursuance of this subject it might be justly asked, Is this, in all the world, the only branch of our profession based on science and art that must stand still, that must accept blindly the traditions handed down to us without investigation? Are we to feel and believe that progress is impossible, that we may not and cannot advance with the spirit of the age? Can it be possible that this is true of all branches of our profession but that of anæsthesia, and if so, why should this strange condition of affairs exist, seeing that the additional demands of the surgeon require all the help from the anæsthetist that lies in his power?

THE RELATIONS OF THE INSANITIES TO CRIMINAL RESPONSIBILITY AND CIVIL CAPACITY.

By Sir John Batty Tuke, M.D., F.R.C.P.Ed.; and
Charles R. A. Howden, M.A., *Advocate.*

X. Civil Capacity.

(*Concluded from Vol. XVI. page* 528.)

In questions of civil capacity, we start with the assumption that, on attaining a certain age, every one can govern his person and estate, and is able to enter into legal transactions with a sufficient understanding of their nature and consequences. We presume that he has had sufficient experience of the world to appreciate the results of his acts, and enough self-control to be guided by his knowledge. He has become a free agent, and, so long as he keeps within the law, he is responsible to no one for the use that he makes of his person and property. As, however, in criminal law he may be held irresponsible for his acts in the event of his mental powers being impaired by disease, or never coming to maturity, so also the law interferes in like circumstances to protect him from the consequences of his civil acts, either by a general declaration of incapacity, or by avoiding individual acts which affect his estate. The relation of insanity is thus essentially the same both to criminal and to civil acts. We have the same presumption of sanity and responsibility, and must in the same manner prove the existence of disease or immaturity in order to deprive an act of its effect either in criminal or in civil law.

There are, however, some important points of difference between the civil law and the criminal law in the matter of insanity, arising partly from the different ends and character of the two branches of the law, and partly from the different character of the acts with which we have to deal.

As a rule, the law has been more ready to admit insanity as a plea for avoiding civil acts than as an excuse for crime. There are two obvious reasons for this. The first is that the simple leading prohibitions of the criminal law are more easily understood than the more complicated transactions of civil life. But a more weighty reason is that every undue or uncertain remission of punishment tends to weaken the whole system and to injure the public security. It is chiefly on this ground that lawyers have regarded with great jealousy any attempt to extend the plea of insanity in criminal cases beyond certain sharply defined limits; and they have in consequence been subjected occasionally to the absurd accusation of paying more regard to property than to life, by writers who have only looked to the individual case, and have forgotten that any loose dealing with the criminal law may extensively affect the public safety, while the effect of annulling a civil act is chiefly confined to those immediately concerned in it. We find infancy treated in exactly the same way. In every country the period of civil incapacity extends beyond the point at which criminal responsibility is held to begin, and the minor is punished for his criminal acts at a time when the law would protect his estate from the consequences of his own imprudence.

While, therefore, the criminal law has always required proof that the mental disorder has reached a certain point before it admits the destruction of responsibility, the civil law has generally been ready to avoid acts which can be proved to be affected to any extent by insanity. And, following the same tendency, the civil law has established a general presumption of incapacity wherever the existence of insanity is established. We have already contended that this was the correct presumption in the criminal as well as in the civil law; in point of fact, it ought in the former case to be stronger and less easily rebutted. The acts which form the subject of criminal inquiries are generally the result of phases of excitement or feeling the strength of which can only be estimated by conjecture; and in this deep uncertainty we must be guided very much by our experience of the possibilities of similar cases. In dealing with civil acts, on the other hand, we are chiefly concerned with questions of intelligence and capacity which can more readily be tested by examination. We may very often ascertain with tolerable accuracy how far a man understands the particular civil relations with which he has to deal; and the mere fact that he has intelligently dealt with them may in itself yield a presumption that disease has not affected his capacity for that particular act.

Although, therefore, the civil law will, as a rule, avoid any act which is affected by mental disease, the presumption of incapacity which arises from the proof of disease is not always so difficult to overcome as the corresponding presumption of irresponsibility generally ought to be. The nature of the civil act and the conditions under which it was executed may occasionally be of such a kind that we can obtain sufficient evidence of capacity for that particular act, even although the mind be generally affected in such a way or to such an extent that we could not overcome what we think ought to be the presumption of irresponsibility in the case of a criminal act. In some cases, characterised mainly by melancholia, for instance, it is at least possible that we may occasionally have sufficient proof that civil acts are intelligently executed; while in the same cases the difficulty of overcoming the presumption of irresponsibility would be insuperable; and the same may be true of other cases of insanity in which the general intellectual capacity is little affected, and the morbid element exhibits itself chiefly in phases of excitability and violent feeling.

The difference between the nature and conditions of civil and criminal acts points also to a difference between the relative value in these cases of medical testimony. Not only does the nature of the criminal act in itself suggest an exceptional condition, but we are practically never in a position to obtain any direct evidence by examination of the mental condition at or prior to the date of the act. We are therefore nearly always, in difficult cases, thrown back upon conclusions drawn from comparatively scanty direct evidence, and from the experience of similar cases; and in such a province expert evidence is not only of pre-eminent value, but practically excludes all other testimony. In questions relating to civil acts and business capacity, on the other hand, we have generally access to a great mass of relevant direct evidence as to the mental condition; and in such cases the medical evidence is often of less consequence. If, as in many civil cases, the question is merely one of estimating the amount of intelligence and capacity, and there is nothing occult about the case, the evidence of those who know the man and the circumstances is probably of greater value than medical testimony can be. We require, of course, always to be assured that the case is not one in which an external appearance of reason is combined with some deep-seated delusion or disturbance; but if that is so, and all the evidence as to the mental capacity either for general business or for some particular act is accessible to the Court or jury, the medical opinion as to capacity does not possess the same pre-eminent weight that it must always have in questions of responsibility. In charging the jury in the case of Morrison *v.* Maclean's Trustees (1862, 24 D. 631), Lord Justice-Clerk Inglis discarded entirely the evidence of medical experts who had been asked to form their opinions "whether the man was insane, or whether he was capable of executing his will, upon a consideration of the facts of the case, upon a consideration of all his peculiarities in manners and speech and behaviour, upon a reading of his letters, upon a general consideration of how far he could form definite and rational ideas upon various subjects." "When medical men," he told the jury, "are asked to form opinions upon such facts as these, where there is no medical science involved, they are asked simply to usurp your functions. It is you who are to return a verdict upon that question of fact, whether this testator was mentally capable of executing such a settlement as he has left behind him."

We do not encounter in civil cases the difficulties which in criminal law have arisen from the attempt to analyse and define the conditions of irresponsibility. In the older law, the admitted cases of incapacity, like those of irresponsibility, were included under general terms, which, in both branches of the law, embraced none but the grosser forms of insanity. But while in the criminal law these terms were, as we have seen, replaced by a psychological definition, in the civil law they were simply extended by an increasing practical recognition of the less-marked forms of insanity. The most general of the older expressions, that of "*non compos mentis*," probably in its earlier use included none but very extreme cases, but as it never was subjected to any sharply defined limits, the Courts were able to extend it and its modern equivalent *of unsound mind* to every case in which it seemed expedient that the law should interfere.

The presumptions which apply to civil cases differ, as we have said, somewhat materially from those of the existing criminal law. The presumption of sanity is indeed the same, but the presumption of capacity, which naturally follows from it, may readily be overturned by evidence of the existence of mental disease or defect. Whenever the existence of insanity is proved, the burden of proof alters, and it lies on the party supporting a deed to show that, in spite of the existence of mental disease, the capacity remained unaffected, so far at least as that particular act was concerned. Even when the insanity has apparently disappeared, and the act itself is to all appearance rational, the presumption is against the deed, unless it is proved that the disease is really gone (Symes *v.* Green, 1859, 1 Swabey & Tristram, 401). In such cases the presumption can only be completely removed by medical evidence that the recovery is complete.

In the matter of testamentary capacity, the law in England was for a considerable period supposed to be settled by the decision in Waring *v.* Waring (1848, 6 Moore P. C. 341). In that case Lord Brougham laid it down that the mind being one and indivisible, any degree of insanity was fatal to testamentary capacity. Waring's case was followed by Smith *v.* Tebbitt (1867, L. R. 1 P. & D. 398), but Lord Brougham's statement of the law was overruled in the later case of Banks *v.* Goodfellow (1870, L. R. 5 Q. B. 549), where it was pointed out that it was not necessary for the decision in either of the cases, inasmuch as in both cases the delusions which were shown to exist were of a kind which would affect the making of the deed. In Banks *v.* Goodfellow, the jury were directed to consider whether at the time of making his will the testator was capable of having such a knowledge and appreciation of facts, and was so far master of his intentions and free from delusions, as would enable him to have a will of his own in the disposition of his property, and to act upon it. "It seems unreasonable to deny testamentary capacity on the speculative possibility of unsoundness which has failed to display itself, and which, if existing in a latent and undiscovered form, would be little likely to have any influence on the disposition of the will. No doubt, where the fact that the testator has been subject to any insane delusion has been established, a will should be regarded with great distrust, and every presumption should, in the first instance, be made against it. . . . But where in the result the jury are satisfied that the delusion has not affected the general faculties of the mind, and can have had no effect on the will, we see no sufficient reason why the testator should be held to have lost his right to make a will, or why a will made under such circumstances should not be upheld. Such an inquiry may involve, it is true, considerable difficulty, and require much nicety of discrimination, but we see no reason to think that it is beyond the power of judicial investigation and decision, or may not be disposed of by a jury directed and guided by a judge." In this case it was proved that the testator had had delusions, but the will was upheld, because they were not of a nature to affect the testator in disposing of his property. In the same case the standard of capacity required for the making of a will by a man of impaired mental power was defined as "the capacity on the part of the testator to comprehend the extent of the property to be disposed of, and the nature of the claims of those he is excluding."

The doctrine of Lord Brougham in Waring's case has never been accepted in Scotland. There has always been, of course, a distinction drawn between delusions which affect the subject-matter of the deed, and delusions which do not. In Hope *v.* Hope's Trustees (1898, 1 F. (H. L.) 1), Lord Watson laid down the proposition as beyond dispute, that a testamentary disposition cannot receive effect if it be shown that its provisions were prompted by an insane delusion or delusions existing in the mind of the testator. But, on the other hand, in Morrison *v.* Maclean (*cit.*), Lord Justice-Clerk Inglis told the jury that they could not safely conclude that, because the testator had a disordered belief upon some extraneous matter, he was therefore necessarily incapable of making a will. In Nisbet's Trustees *v.* Nisbet (1871, 9 M. 937), the authority of Banks *v.* Goodfellow was preferred to that of Waring. In Ballantyne *v.* Evans (1886, 13 R. 652), it was held that a testamentary writing, in itself reasonable, will not be deprived of effect merely upon the ground that the writer was at the time subject to an insane delusion, from which he never recovered. In that case Lord Justice-Clerk Moncreiff said: "Formerly it used to be laid down from the bench in cases of insanity, that the mind being one and indivisible, a man could not be partly sane and partly insane; and that therefore where a person was proved to have entertained false delusions—insane delusions—his other acts, however rational in themselves, or however intelligent they might be, were necessarily those of a person whose mind was deranged. That doctrine, however, manifestly had the effect of putting out of the pale of rational and intelligent acts a great many proceedings which were in themselves clearly the product of intelligence and reason: and it seems now to have been held in England, in some cases which were quoted to us, that if the act which is the subject of investigation be in itself intelligent and reasonable, bearing no trace of the want of ordinary self-command, it may stand good, although it should prove that on other subjects, unconnected with the act in question, the maker of the deed, or the doer of the act, laboured at the time under an insane delusion. I think that this principle, to the extent to which it has as yet been carried, is founded on good sense, and has support from the more recent researches into the phenomena of mental derangement. It may be objected—not perhaps without weight—that the attempt to trace the operation of cause and effect in an unsound mind is neither philosophical nor practicable, for it is chiefly there that the disordered intellect shows itself most inscrutable. I do not stop to consider or solve those doubts. My own opinion has always been that in questions in this difficult branch of social jurisprudence, generalisation is to be avoided, for we deal with matters beyond our cognisance—with clues and ramifications we are unable to trace or follow. Each case must be considered in its own circumstances, without attempting to deduce general rules as a guide for others. In this case I am quite satisfied that no insane delusion was at work in the execution of the instrument under reduction; that the mind which conceived it was perfectly capable of doing so; and that the man who wrote the will perfectly understood the effect and purport of the instrument."

There is, of course, a distinction to be drawn between the insanity which is sufficient to invalidate a deed, and the facility or weakness of mind which renders the granter of a deed liable to be unduly influenced. In the latter case, in order to invalidate the deed, the facility or weakness must first be proved, and then the fact that advantage was taken of this to bring undue influence to bear upon the granter.

Where the granter of the deed has been cognosced as insane, or where his affairs have been put into the hands of a *curator bonis*, on the strength of medical certificates certifying him to be unable to manage his own affairs, or where, in England, a commission of lunacy has been issued, the presumption against the validity of the deed, although not conclusive, is, of course, especially strong. In the well-known Dyce Sombre case (1856, 10 Moore 232), where the testator whose will was in dispute had been found to be of unsound mind by the verdict of a jury under a commission of lunacy, and where the commission had remained unsuperseded until his death, it was pointed out that though the presumption was against the will, that presumption might be rebutted. In that case the evidence of sanity was unsatisfactory, and the will was held to be invalid. The presumption against a deed is also necessarily strong when the deed is executed in a lunatic asylum. In Selby *v.* Jackson (1843, 6 Beavan 192), where the plaintiff endeavoured to set aside as void two deeds granted by him while he was an inmate of an asylum, the Court remarked that the defendants "placed themselves in a position which disentitled them to the ordinary presumptions which are given in the general transactions of mankind. The plaintiff being under confinement under medical certificates justifying his being confined as a lunatic, and being at the same time under personal restraint, the burden of proof was thrown upon those who dealt with him." But here again the presumption is not conclusive, and in this very case of Selby the Court in the circumstances of the case refused to set aside the deeds. In Symes *v.* Green (*cit.*) it was remarked: "There is no doubt that a will, prepared and executed in a lunatic asylum by a man not generally in possession of his faculties, ought to be regarded with great care and jealousy; but this should not be carried too far, for a person may be in a lunatic asylum because he is affected by a malady which makes it necessary that he should be placed under restraint, but who at times may be perfectly sane." In Scotland, in the case of Nisbet's Trustees (*cit.*), a will was upheld which had been made in a lunatic asylum by a person who had been confined there on the ground of insanity for several years, and who had died there two months after the date of the will. In this case it was pointed out that "where the will, or the instructions for the will, have been written by the hand, or framed out of the thoughts, of the testator himself, the rational character, and even the just and equitable and appropriate character of the will, affords important evidence of capacity."

There may be, of course, a material difference between the case of a man who has been cognosced as insane or who has been put under curatory, and the case of a man who has been confined in an asylum on the strength of medical certificates. The former case is necessarily based upon a conclusion that the man is incapable of managing his own affairs, whereas in the latter case the necessity for his confinement in an asylum may depend chiefly upon considerations of personal safety or health. There may be cases in which it is perfectly necessary to seclude a patient in an asylum, and in which his capacity for executing deeds may be almost wholly untouched; and it must, of course, be remembered that, in the case of voluntary patients, the reasons which cause them to retire to an asylum are generally such as affect their power of self-restraint and not their mental capacity. Although, therefore, in the great majority of cases the inmate of an asylum is incapable of executing a valid deed, the force of the presumption in each individual case depends entirely on the nature of the mental affection. And indeed the same may be said generally of the presumptions of incapacity from insanity. Both the strength of the presumption and the nature of the evidence by which it must be overcome vary very much in different cases. In cases of simple defect, for example, the presumption may disappear at once before evidence of capacity drawn from the transaction itself and the circumstances attending it. It may be enough in such cases to show that the subject-matter of the transaction lay clearly within the capacity of the granter of the deed, and that no undue influence was brought to bear upon him. In cases of simple depression, even when the nature of the malady renders confinement in an asylum a necessity, the deed may generally be sustained when it is clearly proved to have originated with the patient; the danger in such cases usually lying in his readiness to accept what is suggested to him by others, without attempting to understand it. When, on the other hand, the case is complicated by the probable existence of delusions, the presumption against a deed is generally exceedingly strong, for it is often extremely difficult to say how far even some act which appears to be perfectly rational may not be determined by a hidden insane motive.

In the cases of recurrent mania which seem chiefly to have been under consideration in the decision in Symes *v.* Green, the natural presumption from the pre-existing insanity may be entirely set aside by the evidence of a medical man who is thoroughly acquainted with the case; for in some of these cases the patient is perfectly sane in the intervals between the attacks. The evidence which is required to overcome the presumption of incapacity which arises from the existence of disease or defect, thus varies extremely both in its character and in its necessary strength. In some cases, where the presumption of irresponsibility would be extremely strong, as, for instance, in a case subject to transient attacks of epilepsy, the presumption of incapacity has scarcely any value. In other cases characterised by shifting delusions, mental incoherence, or high excitement, it can scarcely be overcome, for in such cases it is highly probable that an act, although apparently rational, is in reality in some degree affected by the disease.

It is not our purpose in these pages to deal in detail with the effect of insanity upon particular legal acts. But there is a special element which, in England, at all events, enters into the question when we come to consider what are known as executory contracts. In Scotland, the common law, based upon the principles of Roman jurisprudence, makes consent a necessary element of a contract, and an insane person is incapable of giving consent, and therefore of entering into a contract. An apparent exception is to be found in the case of "necessaries" supplied to an insane person; but it is rather on grounds of equity than of strict law that the estate of a lunatic is held to be liable not only for "necessaries" supplied to him, but in general to make good what has been *bonâ fide* done for the benefit of the lunatic. The liability of the lunatic's estate for "necessaries" is now made clear by the Sale of Goods Act, 1893, which has in section 2 a proviso to the effect that where necessaries are sold and delivered to a person who, by reason of mental incapacity, is incompetent to contract, he must pay a reasonable price therefor; and "necessaries" are defined as meaning "goods suitable to the condition in life of such person, and to his actual requirements at the time of the sale and delivery."

In England, however, there is a point in connection with executory contracts which merits further notice. At common law, such contracts, when they are entered into with a lunatic, and when the parties cannot be restored exactly to their former position, are not necessarily avoided by proof of insanity. In the cases of Baxter *v.* Earl of Portsmouth (1826, 2 C. & P. 178) and Dane *v.* Lady Kirkwall (1838, 8 C. & P. 679), it was held that a contract made with a lunatic for necessaries might be good. In the latter case it was laid down that the point was whether "the plaintiff knew that Lady Kirkwall was insane, and, knowing that, took advantage of it." The leading case, however, is that of Molton *v.* Camroux (1848, 18 L. J. Ex. 68, 356). In that case it was decided that a contract entered into *bonâ fide,* and in the ordinary course of business, is not void by reason of one of the parties having been at the time of such contract of unsound mind, when such unsoundness was not known to the other party. Chief Baron Pollock in his judgment says: "When a person, apparently of sound mind and not known to be otherwise, enters into a contract which is in the ordinary course of human affairs, which is fair and *bonâ fide*, and which is executed in good faith, and the subject-matter cannot be restored and the parties put *in statu quo*, such contract cannot be afterwards set aside either by the alleged lunatic or those who represent him."

In the more recent case of The Imperial Loan Company *v.* Stone ([1892], 1 Q. B. 599), Lord Esher, M.R., said: "When a person enters into a contract, and afterwards alleges that he was so insane at the time that he did not know what he was doing, and proves the allegation, the contract is as binding upon him in every respect, whether it is executory or executed, as if he had been sane when he made it, unless he can prove further that the person with whom he contracted knew him to be so insane as not to be capable of understanding what he was about." The result of these cases seems to be to establish in England an exception to the general doctrine of the incapacity of the insane. A man may be "so insane as not to be capable of understanding what he was about," and yet a contract made by him while in that condition may be binding, unless he can prove that the other contracting party knew of his insanity.

On the authority of these cases, it may be laid down that in England an executory contract made with an insane person will be sustained on condition—(1) that the contract is a fair one; (2) that it was entered into without knowledge of the lunacy; and (3) that it has been partly executed, so that *restitutio in integrum* is impossible. It would seem, however, that at common law a contract for necessaries would be sustained, even though the party were known to be of unsound mind, if no advantage were taken of him. This point is now settled by the Sale of Goods Act, 1893, which we have already quoted. But neither the Act nor the common law would cover a contract or purchase of an exceptional kind. If, for instance, as has often happened in cases of general paralysis, a man makes purchases of an extravagant or useless kind, it is no answer to say that the bargain is a fair one, if the seller had sufficient grounds for suspecting the existence of insanity.

There is no very clear authority for saying in what sense a contract must be a fair one in order to be sustained if insanity be proved. It does not appear that unfairness approaching to fraud must be proved. The bargain may be of such a kind that the party, although not knowing that he had to deal with a lunatic, was enabled by the lunatic's state of mind to gain an advantage over him, but yet not to such an extent or in such a way as could be called fraudulent. It rather seems that it must be the reasonableness of the contract itself to which we must look, in judging of its fairness, and not to the manner in which it was entered into. It seems only equitable that a lunatic should be relieved from a contract which, even to the other party, must have appeared unreasonable or disadvantageous, even although there would have been no ground for the interference of the law in the case of a sane man who was presumably able to take care of himself.

It is almost needless to remark that in this class of cases expert evidence is almost wholly useless. The question involved is not the actual mental condition, but the external appearance which it presented to persons having no special acquaintance with the phenomena of mental disease.

REVIEWS OF BRITISH AND FOREIGN LITERATURE.

Ex-Cathedra Essays on Insanity. By T. Claye Shaw, M.D., F.R.C.P., Lecturer on Psychological Medicine, St. Bartholomew's Hospital, London. London: Adlard.

Dr. Claye Shaw's volume of "Essays on Insanity" will be welcomed by a larger circle than that of his former students, to whom they are ostensibly addressed. There is still such a vast tract of unknown territory in the subject with which they deal, that ample scope is offered for speculations and theories which attempt to open up this undiscovered country. Some efforts in this direction made by Dr. Claye Shaw are now put into more permanent form than that in which they first saw the light. Their subject-matter varies from a discussion of consciousness to the surgical treatment of delusional insanity, so it need hardly be said that their range is considerable. Throughout most of them there runs a plea for a closer study of normal psychology, not only by the well-worn road of introspection, but by the more recent experimental method. Several instances are to be found where the latter has yielded valuable information in unexpected directions.

The essay on "Evolution and Dissolution" may be taken as typical of the author's attitude. Development or evolution is the line of progress of all living matter, and dissolution its line of regression. With respect to the former he asks, Is there any evidence of such development of human mental powers? Is there any sign of the appearance of a new mental faculty? There are no doubt physical elements within the brain which would permit of such development, visible also in the mental sphere, but our knowledge of the former is small, while with respect to the latter it is doubtful if we should at first be able to recognise it. Were it, for instance, possible that a new sense were to be developed, it is more than probable that we should not be aware of its first beginnings. The discontinuity of variation could not be so great as to make its appearance sudden, so that it would likely have reached a fair degree of development before it would be recognisable. There is, however, one condition which it would have to satisfy if it is to conform to the general evolutionary plan, and that is the characteristic of utility. Dr. Claye Shaw appears to think that in the territory of the "supernatural" we may be witnessing the first beginnings of a line of evolution in the psychical world. He evidently regards the work of the Psychical Research Society as of more than passing interest, though he does not commit himself to any definite statement as to where he thinks this line of advance is leading, or even where it commences. It may be in what is called "telepathy." Some form of vibration is the basis of all the senses we at present possess, and it is probable that any new sense will be an example of the same principle. With regard to telepathy, there is a decided fascination in considering it as analogous to the recently discovered Hertzian electric vibrations. But there are several considerations that must first be disposed of. There is the question of the energy available to set the vibrations in action, and there is also the question, already seen to be necessarily involved, that of utility. Should we now be on the threshold of a telepathic era, it can readily be seen that a great change will be necessary, both socially and morally, before such a state can be fully established. It is conceivable, however, that the birth of this new sense, or faculty, or whatever it may be called, might prove to be the very instrument for accomplishing the evolution of the social and moral world to higher and higher levels.

In dissolution the same laws hold good that govern the process of evolution. But, in addition, one may expect disharmony of action, and in insanity one undoubtedly finds this. Hughlings Jackson's explanation, though probably true, does not contain the whole truth. Disease is not so mathematically exact as his explanation would require it to be. In this connection Dr. Claye Shaw relates the answer of a candidate who was asked to describe the order of retrogression in loss of memory. His answer was: "This is evidently a question relating to dotage. There are three forms of dotage, namely—senile dotage, or loss of memory in old age; anecdotage, or that form when one repeats jokes in the same company over and over again; and *table d'hôteage.*" Presumably this last refers to the tendency that meals have to repeat themselves.

As already said, the subjects of these essays cover a wide area. Some of them are definite and concrete, and it is of interest to have the opinion upon them of a man with such experience as Dr. Claye Shaw. The majority are of a more speculative character, and may consequently be less satisfying to those who desire to see a definite point stated and proved. But they are all brightly written, and will well repay perusal.

A Manual and Atlas of Medical Ophthalmoscopy. By Sir WILLIAM R. GOWERS, M.D., F.R.C.P., F.R.S. Fourth Edition. London: J. & A. Churchill.

WE gladly welcome a new edition of "Gowers' Manual and Atlas of Medical Ophthalmoscopy." In the preparation of the present edition the author has again been fortunate in having the services, as collaborateur, of Mr. Marcus Gunn, an ophthalmic surgeon whose experience in medical ophthalmoscopy is probably unequalled in this country. Throughout the text, as in former editions, numerous black and white drawings are interspersed, and at the end of the volume a series of autotype plates, reduced facsimiles of sepia drawings, are to be found. The author lays stress on the value of uncoloured plates for teaching purposes as being far more true to nature, believing that the absence of colour is more than compensated for by the attention, which its absence compels, to the more important elements of form. While fully recognising the importance of form in ophthalmoscopic or other diagnosis, we are strongly of opinion that every medical atlas should aim at reproducing nature, and that nothing can surpass in usefulness carefully reproduced coloured plates of the fundus oculi, seeing that they represent nature in the most realistic manner possible.

The present edition, like its predecessors, is divided into two parts, together with a short introduction. In the introduction, valuable hints are given as to the methods of using the ophthalmoscope, and the variations seen in the normal fundus. Due prominence is given to the importance of acquiring familiarity with the direct method, on account of the much higher magnification under which the fundus can be explored as compared with the indirect method, and attention is drawn to the use and abuse of drugs used for the purpose of mydriasis. We are surprised, however, to find no mention made of certain recent mydriatics, such as euphthalmine, which is vastly superior to the mydriatics recommended, namely, cocaine and homatropine. For ophthalmoscopic examination euphthalmine is an ideal drug, seeing that it acts quickly and simply dilates the pupil without affecting the accommodation.

Part 1 deals with the changes met with in the retinal vessels, optic nerve and choroid, and is probably the most interesting part of the book; while Part 2, the larger part of the work, is devoted to the ophthalmoscopic changes met with in special diseases, such as diseases of the brain, meninges, and spinal cord, and diseases of the urinary and circulatory systems. Although some new matter has been added to the work, such as the description of abiotrophy-family optic atrophy, we are a little surprised to find no reference made to certain recent works, as might be expected in a new edition of a volume such as this; still we are bound to admit that it is an excellent treatise on medical ophthalmoscopy, and that it is a work which cannot fail to be of inestimable value alike to ophthalmic surgeons and to physicians.

The Pathology of the Eye. By J. Herbert Parsons, B.S., D.Sc. (Lond.), F.R.C.S. (Eng.). Vol. i. "Histology," Part 1. London: Hodder & Stoughton.

The object of this treatise is to give as complete an account of the pathology of the eye as is possible in the present state of our knowledge. So far, no complete monograph on the pathology of the eye has been written in any language, although various attempts have been made from time to time to describe and illustrate the chief facts relating to pathological histology. All of these, with the exception of Ginsberg's "Manual" and the incomplete work of Greeff, are inadequate and out of date; and even the latter works are not available to all, because they are written in a foreign language. To all English-speaking ophthalmologists Parsons's comprehensive "Treatise on the Pathology of the Eye" must therefore be of particular interest, especially at the present time, when it is generally admitted that in this department of ophthalmology Germany has had, and still has, practically the entire monopoly.

During the past decade, owing to the newer methods of staining and the improved means of bacteriological research, most valuable contributions have been made, not only to general pathological histology, but also to the pathology of the eye; and although the time may not at present be ripe for dogmatic finality, still an effort should be made to collect in accessible form the knowledge we already possess. This the author has done judiciously and successfully, for he has, at the expense of enormous labour, culled from European and American scientific journals the facts so far discovered, and to these he has added his own valuable researches.

The work is divided into four volumes, the first two dealing with the pathological histology and the last two with the general pathology of the eye.

Volume i., the volume under review, is devoted to the pathological histology of the lids, conjunctiva, cornea, sclerotic, iris and anterior chamber, and ciliary body, together with the bacteriology of the conjunctiva. It is copiously illustrated, chiefly by reproductions of microphotographs, which have not undergone the process of retouching. These are, on the whole, good so far as the expert histologist is concerned, but by the uninitiated some difficulty will be experienced in recognising details in several of the reproductions.

After reading the book through from cover to cover, we are greatly impressed with the magnitude of the task, with the judicious elimination shown, with the faithful manner in which the salient points of the various affections are recorded, with the author's extensive knowledge of the subject, and with the able manner in which he has accomplished an exceedingly difficult piece of work. The whole book is a perfect mine of information on a subject most interesting and important to every ophthalmologist. We cannot speak too highly of it, believing, as we do, that the book before us represents the highest point of excellence ever attained by British Ophthalmology.

If the remaining volumes are on the same high level of excellence as the present one, there can be little doubt that Parsons's "Treatise on the Pathology of the Eye" will, for many years to come, be the main work of reference on the subject in this or in any other country.

A Practical Treatise on Nervous Diseases. By F. SAVARY PEARCE, M.D., Professor of Nervous and Mental Diseases in the Medico-Chirurgical College of Philadelphia. London: Sidney Appleton.

As the following extracts will show, we cannot think that the students and general practitioners for whom Dr. Pearce has written will find this book a useful or trustworthy guide. Let us take, for instance, the chapter on that most important subject—inflammation of the meninges of the brain. This is divided into pachy-meningitis and lepto-meningitis, each being subdivided into the acute and chronic simple, and the acute and chronic infectious (*e.g.* tuberculous and cerebro-spinal) forms. After these preliminaries come—(1) Acute cerebral pachy-meningitis (sub-title

—inflammation of membranes of the brain), which may be primary, from "catching cold," or secondary, to infection. The symptoms given are those of ordinary purulent meningitis, though we gather, as to prognosis, that recovery is the rule. (2) Internal hæmorrhagic pachy-meningitis. (3) Cerebral lepto-meningitis, usually septic. (4) Hydrocephalus, acute and chronic, the former being an inflammation of the ependyma in marasmic babies, causing symptoms of a subacute meningitis, including "depression of the eyeballs within the socket, together with exophthalmos." (5) Meningitis serosa. But for the reference to tubercle in the first paragraph, tuberculous meningitis is not even mentioned; there is no allusion to simple basal meningitis, and though we read of cerebro-spinal meningitis that its treatment "will be considered in its proper place," the present reviewer has failed to discover any account either of the disease or its management. Search in the index has not helped him; under tuberculosis there is only one reference—and that wrong. Turning to locomotor ataxia, we find that the classical division into three stages is adopted; the knee-jerks are never alluded to until the last of these—the paralytic—is discussed, when we read that "the *absence* of the deep reflexes determined so early in the preataxic stage remain persistently *absent* during the course of the disease." [The italics are ours.] Tetanus ought not to come, as the page heading indicates, under vasomotor and trophic disorders. Cephalic tetanus is not "a chronic form of subacute tetanus in which trismus is a prevailing symptom," and though the treatment is unsatisfactory, it is not so because "the cultivation of the tetanus bacillus cannot be grown outside the human body; also, as we have not been able to produce the disease in mild enough form in the lower animals to avoid death, the antitoxin has not been obtained" (p. 348). Paralysis of the third nerve does not produce nystagmus (p. 128), and to write "a disease in one of the optic nerves, and closely allied to diseases of the nervous system, is cataract," is neither sense nor English. These passages are taken at random, and could be multiplied, but they are enough to show that we are not unduly harsh in dispraise of Dr. Pearce's treatise. The book is illustrated with diagrams and photographs, many of which are good, but some, *e.g.* that of congenital nystagmus, are really of no educational value. There are numerous misprints in the text, and the page references in the index are by no means always correct.

NOTES ON BOOKS.

"This work (*The Prevention of Consumption*, by Alfred Hillier, M.D., Longmans, London) deals with tuberculosis as a great social problem, which is at present exercising the minds of medical men, legislators, local and public health authorities, and intelligent citizens in every civilised country in the world." It is written in clear and simple language, and contains, in an easy assimilable form, matter which ought to be made known to every one. Interest is maintained throughout, and, without in any part making the book technical, the author in a delightfully easy manner imparts a surprising amount of information. Of especial interest is the account given of how the better appreciation of the immediate and later effects of prevalent tuberculosis has led the German State Insurance authorities, on economic grounds, to treat early cases at the Board's cost, and also to undertake the supplying of the general public with information as to preventive measures. It would be an advantage to the nation at large if every one would read this book. Primarily intended for the laity, it nevertheless affords pleasant and profitable reading to the practitioner.

Mr. W. Roger Williams prefaces his work on *Vaginal Tumours* with special reference to cancer and sarcoma (John Bale, Sons, & Danielssen Ltd., London) with the statement that the "chief characteristics of modern tumour science is the immense accumulation of details, which perplex the judgment," and which, we might add, no doubt serve a purpose, but entail an amount of labour on the reader's part quite incommensurate with the gain. Mr. Williams continues: "I have endeavoured in this present work to get rid of this incubus by co-ordinating and arranging the *disjecta membra* in a concise and accurate manner, so that their significance may be readily grasped by the practitioner"—and he has succeeded in producing a short book which contains all that is known on this subject, and which is at once readable and thoroughly systematised. It is no mere statement of bald facts and conclusions, a happy mean of clinical histories and copious references to other investigators' works being supplied. He has searched the field of gynæcological literature to amplify his own experience, and then given us a precise and well-ordered account, which will be valuable to the student and practitioner, and essential to the specialist.

Mr. Cecil H. Leaf has done better work than that recorded in *The Clinical Causes of Cancer of the Breast, and its Prevention* (Constable, London). In the first place, he fails to define what he means by "clinical causes," an expression which certainly requires definition. The sense in which he uses the word "cause" throughout the book leads to endless confusion. It seems to be employed as synonymous with "antecedent circumstance," with the result that time and again the author begs the whole question. The fact is, that the number of different "causes" to which he inclines to attribute cancer of the breast is so great, that no woman could possibly live to middle life without being subjected to many of them. If his theories are correct, the wonder is not that cancer is common, but that it is not universal. As an example of his logic may be quoted the statement that "we have had under our care a woman with a large epithelioma of the labia, caused by prolonged pressure of the child's head during one of her confinements; and a woman who had a cancer of the cardiac end of the stomach, caused by swallowing a set of false teeth many years ago." The author makes certain proposals regarding the prevention of cancer of the breast—"if the above conclusions are accepted." As there is no fear of their being accepted, we need not refer to these.

The Differential Diagnosis of Syphilitic and Non-syphilitic Affections of the Skin, by George Pernet (Adlard, London), is an expansion of a paper read before the Medical Society of University College. It does not pretend to be a text-book. It is a discourse on what is to be noted in the practical differential diagnosis of skin affections. Throughout it bears the vivifying evidences of its originating in a spoken description of the various signs and symptoms, and carries all the advantages and but few of the disadvantages of such an origin. The author writes in light and easy language, and succeeds in clearly emphasizing his points. The book is of such an eminently practical nature that perhaps some of the rarer skin affections referred to might with advantage have been entirely omitted, as their mention tends to "deaden" what is otherwise an easily read and useful book to the practitioner in his daily practice, and to the student in view of his clinical examinations.

Dr. Percy N. Gerrard's work on *Beri-beri—its Symptoms and Symptomatic Treatment* (J. & A. Churchill) is styled by the author an essay, and treats the subject less from a scientific than from a clinical point of view. As the title suggests, the main part is devoted to symptoms and symptomatic treatment, into which latter the author enters with, we think, somewhat unnecessary fulness and attention to elementary details. The subject-matter is well arranged, and is put withal in very readable form. The English is, however, sometimes careless and involved, and a little difficult to follow. For example, what does the author mean when he says that Dr. Hamilton Wright "believes the fever complained of in beri-beri to be unreal, and a subjective symptom"? Then, again, with regard to hiccough, he says: "If the patient can stand up, and is strong enough, a glass of water, drunk as follows, frequently stops hiccough:—Take the glass in the right hand, and, bending the body forward, lower the head until you (the physician ostensibly) can drink out of the side of the glass farthest from you ; the swallowing should be done slowly and deliberately, and occupying about ninety seconds at least." Surely a novel remedy! There are also some unfortunate misprints, *e.g.*, *prima viæ*, *aquæ ad* (in a prescription)—trivial errors, which we regret to see in works of this nature. As a whole, the book is interesting, and should prove of use to medical men who require to treat beri-beri.

In the small volume, *Extracts from an Essay on Beri-beri* (same publisher), the author covers much the same ground as in the larger. He has not troubled the reader with statistics, and has placed before him the essential points in a concise and useful form.

We noticed Mr. Mummery's work on *The After Treatment of Operations* (Baillière, London) so recently, that it is not necessary for us to do more now than chronicle the appearance of a second edition, which contains several alterations and additions calculated to improve it.

The St. Andrew's Ambulance Association has issued an official text-book on *Home Nursing and Hygiene*, written by Dr. J. Wallace Anderson and Dr. George H. Edington, which should prove useful to the students and nurses who work under the guidance of that excellent institution.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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Infectious Diseases.

Treatment of scarlet fever with Moser's antistreptococcus serum (Shaw, *Med. News*, Phila., 1904, October 29).—In this paper the author records his observations on the use of Moser's serum in the St. Annen Kinderspital, Vienna, where for the last four years all severe cases have received the remedy, "with results not less remarkable than those seen after the use of diphtheria antitoxin." It is generally admitted that a streptococcus is the organism most constantly found in scarlet fever; but while Moser and others regard this as the primary cause, Heubner and Marmorek look on it as a secondary infection. Moser obtained it in pure culture from the heart blood of 63 per cent. of fatal cases, and twice from the cerebro-spinal fluid of living children. He has isolated nearly thirty different strains of streptococci, and, by injecting all these into the horse, gets a polyvalent serum which agglutinates in dilutions of 1 to 250,000. This serum was found to protect mice from fatal doses of a toxin isolated from the stools of scarlet fever patients. Scarlet fever is grouped in the St. Annen Kinderspital into mild, severe, very severe, and apparently hopeless cases; the serum is employed only in the last two. The dose is 200 c.c., and in favourable cases it at once brings down the temperature and pulse, and ameliorates the general symptoms. Marmorek's serum and normal serum have no such action. Sequelæ and complications have diminished and become less severe since the introduction of the remedy; no fatal case of nephritis has occurred among those treated. In the four years preceding the serum treatment the average mortality was 14·5 per cent.; in the four years during which it has been employed, 8 per cent., as compared with 13·1 per cent. in the other Vienna hospitals. The serum often produces a rash, and sickness follows its use in about three-fourths of the patients. In small doses it seems of prophylactic value. Unfortunately it is not yet in the market, so that extended tests have not yet been made.

Bökay of Pesth, however, a well-known, reliable observer, has been favourably impressed by it, and Escherich, at first sceptical, is now convinced of its efficacy.

Psittacosis (Vickery, *Med. News*, Phila., 1904, October 22).—In man psittacosis occurs in small epidemics as atypical and not infrequently malignant pneumonia, arising from infection from parrots, among which the disease is a common, indeed the chief, cause of mortality in imported birds. The organism, believed to be specific, was isolated by Nocard in 1893; it belongs to the colon group. In parrots the symptoms of the disease are loss of appetite, debility, drooping of the wings, diarrhœa, and convulsions. In man the onset is acute, with a chill or rigor, and rise of temperature to 103° or 104°; the fever is more or less continuous, terminating by lysis. In many cases successive foci of pneumonia develop. The disease is accompanied by typhoid symptoms —prostration, splenic enlargement, and roseola or petechiæ. The incubation is from one to three weeks, and the mortality about 37 per cent. Notwithstanding the alleged specificity of Nocard's bacillus, the bacteriology of psittacosis and the true relation of the parrot disease to the atypical pneumonia in man are not yet definitely determined, as in some epidemics, apparently certainly due to infection from diseased birds, the above organism has not been present. The writer reports a small epidemic affecting three out of four members of a household, the one escaping being the only person who had not come much in contact with the parrot. The bird was in the house for a fortnight, dying with bloody diarrhœa. The patients took ill eighteen, twenty, and twenty-two days after the arrival of the bird, the symptoms being very much those described above, and in all three ending favourably. The Widal, paratyphoid, and paracolon tests were negative. Bacteriological confirmation of the nature of the condition could not be obtained, as the bird had been dead for some time before the diagnosis of psittacosis was made, but the facts that all the likely diseases resembling psittacosis were excluded, and that the incubation corresponded with that of that disease, favours the correctness of the surmise.

A new acute eruptive fever.—Under this title, Pospischill describes (*Wien. klin. Wchnschr.*, 1904, No. 25) a series of cases he has met with in Vienna during the past few months. He expressly states that during the whole of this year German measles has been entirely absent from the city. He thinks it is possible to group under the name of *Erythema variabile* (the infective erythema, megalerythema epidemicum, or erythema simplex marginatum of other writers) three distinct forms of rash: (1) Cases with a maculo-papular rash, peculiar in having a variable hue—red, lilac, greyish-blue, or brownish red. The rash is chiefly distributed on the face, extensor aspects of the limbs, and calves, and, when the spots coalesce, the skin assumes a smooth glistening appearance. Accompanying the exanthem there is a slight enanthem, sore throat, glandular enlargement, subfebrile temperature, and often a little effusion into the knee-joints. (2) In another group of cases with the same symptoms the eruption is scarlatiniform ("scarlatinoid"); these resemble scarlet fever in most respects, the cheeks, however, having the puffy, swollen appearance of infective erythema. The temperature is lower than in scarlet fever, but if the case is seen after the swelling on the cheeks has subsided, the resemblance between the two diseases is very close. (3) In the third group of cases ("morbilloid") the rash simulates measles very closely. There are, however, no Koplik's spots, and the temperature does not rise with the eruption. This type occurs only in children under four. The other exanthem which the writer describes is scarlatiniform in character; it is distinguished from "scarlatinoid" by the absence of the puffy redness of the cheeks, and from scarlatina by the aspect of the rash, which is paler, brownish red, consisting of small spots, so closely set on a lighter red background as to give the appearance of a uniform blush. There is no desquamation; the temperature is somewhat raised, and there is sore throat. The incubation is about sixteen days. This disease may perhaps be what Filatow has named rubeola scarlatinosa; it is not the same as "fourth disease." The paper contains full details of cases.

Typhoid fever; cardiac and vascular complications and sequelæ (Thayer, *Johns Hopkins Hosp. Bull.*, Baltimore, 1904, October).—This is an elaborate study of the clinical records, necropsies, and after-histories of the 1458 cases of typhoid admitted to the hospital during fourteen and a half years. The analysis of the data is characterised by that thoroughness with which we have been made familiar in many similar pieces of work coming from Osler's clinic, and only a summary of the main points can be given. Thayer succeeded in examining not less than 189 old cases, especially with reference to their cardiac and vascular condition, at periods varying from a month to thirteen years after discharge from hospital. The average blood pressure of these (by Riva-Rocci) was uniformly above normal, and another striking feature was the remarkable frequency—48 per cent. as against 17 per cent. of control cases—with which the radial artery was palpable. The average size of the heart was also greater, and twelve patients, discharged with apparently healthy hearts, were subsequently found to present signs of cardiac disease. The subsequent histories of patients who developed murmurs during their illness, or suffered from arterial or venous thrombosis, are given in detail. The following is a résumé of Thayer's conclusions:—(1) Typhoid is often associated with weakening of the heart muscle, which results in a considerable number of cases in temporary mitral inadequacy, and the appearance, usually at the height of the disease, of an apical systolic murmur, which, as a rule, vanishes during convalescence. In about one-fifth of the cases, however, organic disease develops later. (2) Endocarditis is not common; it was present, unsuspected during life, in three out of ninety-five autopsies; it was diagnosed from clinical symptoms in three out of the remaining 1363 cases. (3) Pericarditis is an unimportant complication. (4) Phlebitis and venous thrombosis usually occur during the third week, associated with fever and leucocytosis, which may precede local pain. Rigors are not uncommon, and, if combined with leucocytosis, should suggest the development of a phlebitis or thrombosis. In thrombosis of the iliac or femoral veins, though the immediate danger is not great, the after results are often grave. The limb is often permanently enlarged, and varicose veins, ulceration, and weakness on exertion are common. (5) Arteritis and arterial thrombosis is a more frequent complication of typhoid than usually thought; especially common in the cerebral vessels, it sometimes occurs in the limbs, in the former case causing hemiplegia, in the latter gangrene. (6) Typhoid is a not infrequent cause of focal arteriosclerosis. (7) While typhoid does not exert so deleterious an action on the heart as acute rheumatism, it is probable that post-typhoid cardiovascular defects are not uncommon, and patients ought therefore to be kept under observation for several years after having had the disease.

Transitory motor aphasia in typhoid is discussed by Hahn (*Wien. klin. Wchnschr.*, 1904, No. 46). His patient was a boy, æt. 12, in whom, about the end of the third week of the illness, as the temperature was falling, patches of œdema resembling giant urticaria developed on successive days on the feet, face, and hands. A day or two later the patient became aphasic, and had slight paralysis of the lower branches of the right facial. The aphasia was purely motor, and unaccompanied by mental aberration. It lasted for a week, during which time the patient could not utter a word, and disappeared completely within three days from the time improvement set in. Commenting on the case, Hahn states that post-typhoid aphasia is always motor. The onset in his patient was absolutely sudden, a point not always to be made out if the aphasia develops in a semi-unconscious person. The condition has been ascribed to psychical and physical exhaustion, not, however, the case in Hahn's patient. It has also been thought to be due to degeneration of the ganglion cells or of the intima of the cortical vessels, and to hæmorrhage. Its transitory nature, however, negatives the idea of a gross lesion, and Hahn suggests that in his case it may have been due to the same vasomotor disturbance as caused the œdema, possibly resulting from the action of toxins absorbed from the bowel.

The Trichocephalus dispar *as a factor in the cause of typhoid.*—Guiart (*Bull. Acad. de méd.*, Paris, 1904, October 18) appears always to have been impressed with the importance of intestinal helminthiasis in infection from the bowel. During an epidemic of typhoid at Brest, last September, he found the eggs of *trichocephalus* in the stools of thirteen out of fourteen typhoid patients, while he found these in only one of a number of soldiers suffering from diseases other than typhoid in the hospital at the same time. *Trichocephalus*, by injuring the mucous membrane of the bowel, seems to render the host peculiarly susceptible to the action of Eberth's bacillus.

Serum treatment of typhoid.—Max Einhorn (*Med. Rec.*, N. Y., 1904, January 16) reports his experience of treating ten cases of typhoid fever with the serum of Tavel and Jez of the Berne Board of Health. In all, the diagnosis was assured bacteriologically, and the remedy was not used in mild cases. Doses of from 6 to 12 c.c. of serum were given daily till the temperature fell below 100° F. A table of the cases, and details of three are given. Einhorn concludes that—(1) In most cases the disease does not seem to have been shortened; (2) a marked reduction of temperature results, the general condition is improved, and convalescence is accelerated; (3) no bad results are to be feared; (4) the treatment is already of decided value.

Rolly's paper on the "Diagnosis of Typhoid Fever" (*München. med. Wchnschr.*, 1904, June 14) is concerned with adaptations of bacteriological methods to clinical work, and is worthy of the study of those working at the subject. Eberth's bacillus is present in the blood early, long before a positive Widal reaction can be obtained. Its detection involves the withdrawal from a vein of 1 or 2 cms. of blood, which can be preserved for twenty-four hours if need be in a peptone grape-sugar medium for transit to a laboratory. Rolly has also prepared a fluid containing typhoid bacilli killed by toluol for carrying out the Widal test with recourse to a bacteriologist.

SURGERY.

UNDER THE CHARGE OF

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Wounds of the Thoracic Duct.

P. Lecène contributes a paper (*Rev. de chir.*, Paris, 1904, December) on the subject of injuries to the thoracic duct inflicted in the course of operations in the cervical region, in which he records a new case observed by himself, and epitomises the cases hitherto reported. In considering the condition, he divides the cases into two classes—(1) Those cases in which the surgeon recognises in the course of the operation that the duct has been injured; and (2) those in which the fact is not recognised till some time later. In the first class the lesion is recognised by the escape of lymph or chyle from the wound in the duct. The fluid may be clear, or mixed with whitish flakes, or milky in appearance, and in some cases it escapes rhythmically in jets which coincide with expiration. The duct may be completely cut across, or the wound may be in the form of a slit in its wall. In the second class the characteristic signs are the escape of chylous fluid from the drainage tube or between the edges of the wound, saturating the dressings, intense thirst, emaciation, general weakness, and sometimes oliguria. Of the twenty-two collected cases only one proved fatal, and death was due to septic complications. In those cases in which the lesion is recognised during the operation, the treatment consists in applying a ligature to the peripheral end of the divided duct. It is not necessary to ligature the central end, as the valvular arrangement of the opening into the vein prevents regurgitation. Suture of the canal has only once been successful (Cushing), and is only applicable to incomplete wounds. When the lesion is not recognised until some days after the operation, it is only necessary to make graduated compression over the wound. The wound should not be opened up, as it is not necessary to ligature the injured vessel.

The Bridging of Nerve Defects.

Charles A. Powers discusses the various methods of bridging nerve defects in a paper (*Ann. Surg.*, Phila., 1904, November) read before the American Surgical Association. With regard to *grafting* nerve tissue (*e.g.*, the sciatic nerve of a dog, or the spinal cord of a rabbit) into the gap, the author concludes from his own experience, and from a study of twenty-two recorded cases, that the results are unsatisfactory, and that "nerve transplantation should be discarded." *Flap-operations* give better results: of six fully reported cases, two were failures and four complete or partial successes. *Implantation*, or *anastomosis*, gave encouraging results in five or six out of ten cases. Bridging the gap with strands of catgut, with or without "tubulisation," by means of decalcified bone tubes, has been employed with varying success. *Resection of bone* to admit of the ends of the nerves being brought into contact "may be advisable in selected cases." [In Professor Annandale's hands this method has proved very satisfactory.—Abstractor.]

THE LEUCOCYTE COUNT IN APPENDICITIS.

JUILLARD (*Rev. de chir.*, Paris, 1904, July) contributes an exhaustive paper on the value of the leucocyte count in surgical affections, and particularly in appendicitis. He considers that the leucocyte count should be included among the signs from which a diagnosis of this disease is made, although he does not think that it can in any way replace the other signs. His general conclusions with regard to its value in *diagnosis* are—(1) That non-suppurative cases are characterised by a leucocyte curve which oscillates between the normal (9000) and what he calls the "inferior line of suppuration" (10,000 to 25,000). In some cases there is a marked, but transient, initial rise. (2) In suppurative cases the curve remains high for two or three days, about the inferior line of suppuration—25,000. (3) In gangrenous appendicitis the variations in the curve are not yet thoroughly explained. In some cases it is normal or subnormal, and this indicates a rapid advance of the disease and a want of resistance on the part of the patient. An elevated curve in such cases points to the development of a purulent peritonitis. (4) Aberrant curves are sometimes met with corresponding to the well-known vagaries of the disease. (5) The leucocyte count enables us to diagnose appendicitis from typhoid fever, non-inflammatory swellings of the cæcum, fæcal accumulation in the large intestine. In these conditions there is no elevation. The leucocyte count must always be considered along with the other symptoms, but when it rises above 25,000 it assumes a decided importance, and may be held to outweigh certain other signs. The absence of leucocytosis, however, does not negative a diagnosis of suppuration. From the point of view of diagnosis the leucocyte curve is of equal if not greater value than the temperature curve. In all doubtful cases the leucocytes should be counted.

From the point of view of *prognosis* it is not safe to draw conclusions from the count in the first forty-eight hours, as in non-suppurative cases there is often an early rise, which, however, is not maintained. On the other hand, in gangrenous cases there may be no initial rise. A continuous rise indicates the formation of pus, while a fall may indicate that suppuration is not going to occur, or else that an abscess already formed is undergoing resolution. In the grave forms of appendicitis a high count is a favourable sign, as it indicates a power of reaction on the part of the patient. In the last stages of the disease it may represent the leucocytosis which shortly precedes death. A feeble leucocytosis, or the absence of it, indicates a very grave prognosis.

With regard to *treatment*, the indications furnished by the count vary according as the surgeon belongs to the school of "*intervenionnistes*" or of "*temporisateurs*." The return of the curve to the normal, and its remaining there, especially if the temperature curve behaves similarly, indicates delay in operating. If the leucocyte and temperature curves remain high, operation is called for. In the grave cases surgical intervention is determined more by the ordinary signs than by the leucocyte count.

Early Operation in Tuberculosis of the Kidney.

Modern views on the pathology and treatment of tuberculous kidney are well illustrated in a short paper by Kümmell of Hamburg (*Centralbl. f. Chir.*, Leipzig, 1904, Beilage, p. 124). He presents a record of forty-eight operations for tuberculous kidney—thirty-three in women, fifteen in men. In all these cases a primary source for the kidney infection was found in some other part of the body, the infection presumably reaching the kidney by the blood stream and setting up a descending infection of the urinary passages. Kümmell maintains that recent observations have conclusively shown that the spread of the tuberculous process in urinary tuberculosis follows the course of the gland secretion, and that in cases of bladder affection the primary lesion is always in the kidney, whence it spreads to the bladder. In cases of genital tuberculosis the infection is an ascending one, again following the course of the gland secretion. Operative treatment of bladder tuberculosis is futile, and should never be attempted; early removal of the affected kidney being the best available means of treatment. Efforts should be directed towards making an early diagnosis, and this is, as Kümmell indicates, by no means easy, for in the earliest stages the only symptom may be turbidity of the urine. He narrates some interesting cases where turbidity of the urine was the main or only symptom noted. Careful examination of the urinary deposit disclosed tubercle bacilli in every case, while the affected kidney was determined by ureteral catheterisation. Excision of the diseased kidney was performed in each of the six cases, and all the patients recovered and are still alive. Kümmell lays special stress on the following points in connection with these cases. First, the majority of the patients were women, and he holds that any bladder trouble in women, where there has been no obvious source of infection, such as gonorrhœa or previous catheterisation, should excite the gravest suspicion of tuberculosis; secondly, the surest diagnostic sign is the discovery of tubercle bacilli in the urine. He was able to demonstrate their presence in all his forty-eight cases, although often only after repeated examinations. Thirdly, the cystoscope often gives little or no information, showing perhaps a normal bladder or minimal alterations. Reliance should only be placed on the results of ureteral catheterisation and the methods for functional kidney diagnosis, such as cryoscopy, etc. When a diagnosis is once made, the only satisfactory treatment is removal of the diseased kidney, partial operations being unsuccessful. To obliterate the ureter, Kümmell uses a galvano-cautery of the size of a ureteral sound, which he passes down the ureter and then heats to a red heat and withdraws slowly. This causes complete obliteration of the lumen of the tube. The prognosis in cases of tuberculous kidney when treated surgically is good. Of his forty-eight cases, five were affected on both sides, and in them therefore only nephrotomy was done. Nephrectomy was carried out in the other forty-two cases, and of these thirty-two are still alive at intervals varying from fifteen years to a few months after operation.

Krönlein (Zürich), in the same number of the *Centralbl. f. Chir.*, gives a short summary of his results in treating fifty-one cases of tuberculous kidney. He regards tuberculosis as a relatively frequent affection of the kidney, 30 per cent. of his operations on the kidney having been for tuberculosis. In agreement with Kümmell, he emphasises the greater liability of women to this affection, as compared with men, the proportion being, in his experience, about 3 to 1. He also believes that in about 92 per cent. of cases the affection is unilateral, and that there is no such thing as an ascending urinogenous infection of the kidney, the bacilli invariably reaching the organ through the blood stream. In thirty-four of his fifty-one cases he excised the affected kidney, and ten of these patients died within a year of the operation, mostly from pulmonary phthisis. Post-mortem examination was made in nine of these cases, and the remaining kidney was twice found to be tuberculous, once to be affected with acute nephritis, and in the other six cases to be healthy. It is interesting to note that none of the fatalities were due to insufficiency of the remaining kidney after nephrectomy. Of the operation cases, twenty-four are still alive at intervals varying from one to fourteen years after operation, giving a percentage mortality of 23·4 one year after operation.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF

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Clinical Observations on Eighty-two Cases of Extra-uterine Pregnancy.

Jakobs (*Ann. de gynéc. et d'obst.*, Paris, 1904, October) states that all these cases were treated by operation, thirty vaginally, fifty-two by the abdominal route. In seventeen cases (eleven primiparæ—six multiparæ) the indication was collapse from internal hæmorrhage. Multiparæ are more predisposed to the condition than primiparæ (in proportion 50 to 26). The average age was 30 to 35, and the left side was more frequently affected than the right. Four of the cases died. There was one case of recurrent ectopic pregnancy, and one went to the full term. In the early cases (sixth to eighth week) trophoblast, penetrated through the lining epithelium as in uterine pregnancy, and sometimes penetrate directly through the peritoneum.

The Induction of Abortion.

Fritsch (*Deutsche med. Wchnschr.*, Leipzig, 1904, November 24) discusses the necessity for this operation in such conditions as phthisis and hyperemesis gravidarum. He has not seen any advantage acrue in the former condition, and points out the difficulty of excluding the hysterical element in the latter. He quotes a case where, in conjuction with a physician, he induced abortion for continuous vomiting, and was afterwards informed by the patient that she could "have retained her food if she had so desired, but preferred to have the pregnancy ended." Fritsch does not think carcinoma of the uterus is ever an indication for terminating pregnancy, preferring extirpation of the uterus in the early months and Cæsarean section at full time. In contracted pelvis, osteomalacia alone justifies emptying the uterus, followed by removal of ovaries and uterus.

Fritsch holds that abortion should not be completed at one sitting, on account of the copious hæmorrhage generally associated with the separation of the decidua. He proceeds as follows:—The usual preparations for a vaginal operation being completed, he introduces a laminaria tent, which is removed at the end of twenty-four hours. With a sound he perforates the membranes. A gauze drain of ichthyol glycerine (1 to 10) is then introduced into the sac. This sets uterine contractions, which in the course of twenty-four hours expel the membranes and decidua intact. He believes that by extending the operation over two or three days, better results are obtained than by dilatation and curetting at one sitting.

The Relations between the Cervix and the Bladder and its Significance in Radical Operations for Cancer.

Sampson (*Johns Hopkins Hosp. Bull.*, Baltimore, 1904, May) refers to the frequency with which cancer of the cervix uteri involves the bladder wall. He believes there is no advantage in removing much of the lower portion of the vagina. As a result of injury to nerves and ganglia, retention of urine frequently follows extirpation. Sampson found cystitis in twelve out of sixteen cases, and he recommends that after extirpation the bladder should be emptied by catheter, and irrigated to prevent its occurrence. In the presence of cystitis, a vesicovaginal fistula should be established, to diminish the risk of ascending infection of the urinary tract.

Permanent Results of Alexander-Adams Operation.

Reifferscheio (*Arch. f. Gynæk.*, Berlin, Bd. lxxiii. S. 159) reports 241 cases from the Bonn Klinik. Of these, 102 were examined at a later date.

Four were not benefited by the operation. Thirty-nine women became pregnant, and in no case were there any bad effects from the operation itself. Reifferscheio thinks this operation less dangerous than any other operation for retroflexion, and as efficacious as ventro-fixation.

Coexistence of Sarcoma and Carcinoma of the Uterus.

Nebesky (*Arch. f. Gynæk.*, Berlin, Bd. lxxiii. S. 653) reports the following case:—P., æt. 57, had laparotomy performed for sarcoma of the uterus diagnosed by a previous curetting. The left breast was at the same time excised for carcinoma. On examination of the uterus, there was found, in addition to a large spindle-celled sarcoma, a papillary adeno-carcinoma. Nebesky detected a similar coexistence in another case, and is inclined to think it may not be so very exceptional.

Eclampsia associated with an Hydatid Mole.

Hitschmann (*Centralbl. f. Gynäk.*, Leipzig, 1904, No. 37) reports a case proving that eclampsia may occur without any actual fœtal metabolism. P., 2-para, æt. 18, had eclamptic fits when four and a half months pregnant, and was delivered of an hydatid mole. The theory that the material causing the convulsions is the product of metabolic changes in the fœtus, does not hold good, and is rather to be looked for in the fœtal portions of the ovum, a view supported by Hitschmann and Veit.

The Permeability of the Tubes by Fluids injected into the Uterus.

Thorn (*Centralbl. f. Gynäk.*, Leipzig, 1904, No. 38), from an experience of twenty-two years with Braun's syringe, has seen no untoward results. He believes that if the cervix is sufficiently dilated, the injected fluid will not find its way into the tubes. In six cases of extirpation of the uterus he injected tincture of iodine and methyl-violet, and found no evidence of their presence in the tubes. He believes that the contractions of the cornua in the living lead to fallacious deductions from experiments on the cadaver.

The Heart and Circulation in Pregnancy.

Stengel (*Univ. Penna. Med. Bull.*, 1904, September) concludes, from a clinical study of seventy cases, that there is not, as is generally supposed, any hypertrophy of the left ventricle. The increased area of dulness to the left side is the result of upward displacement of the diaphragm and consequent displacement of the heart upwards and outwards. After labour the heart rapidly returns to its normal position. An increase of the cardiac dulness on the right side is probably due to some continuous dilatation of the right ventricle during the latter months of pregnancy. During labour there is increased blood pressure, which is absent before and after.

THERAPEUTICS.

UNDER THE CHARGE OF
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The Effect of X-Ray Treatment in Leukæmia.

During the past year several cases of leukæmia have been reported which improved under treatment with X-rays. The method was originated by Senn, and consists in X-raying the spleen and the ends of the large bones of the extremities. A striking case is reported by Rodhe in the *Nord. Tidsskr. f. Ter.*, Copenhagen, 1904, November. The patient showed a severe form of the disease. The spleen was greatly enlarged, and reached to within an inch of the iliac crest. The blood contained 2,500,000 reds and 236,000 whites (47 per cent. myelocytes). The hæmoglobin was 40 per cent. On the 27th of June the ray treatment was commenced. The spleen was rayed for ten minutes each day with the tube at a distance of 15 to 20 cms. From the 7th of July the extremities of the long bones were also exposed for two to three minutes. By 5th July the spleen had already begun to shrink, though practically no change had taken place in the composition of the blood. At the end of another week the blood had considerably improved: Hb, 59; red blood corpuscles, 3,600,000; white blood corpuscles, 208,000 (myelocytes, 25 per cent.). After another seven days' treatment the whites were only 200,000, with myelocytes 10 per cent., while the spleen had shrunk a further inch and a half. After a month's treatment the skin over the spleen began to show signs of irritation, so that by 3rd August, *i.e.* after six weeks, the rays had to be stopped. The blood condition was then Hb, 60; red blood corpuscles, 4,000,000; whites, 7200. By the end of the next month Hb was 70; the whites numbered only 4000, and the spleen has regained almost normal proportions. Thus in this severe form of the disease, six weeks' treatment reduced the whites from 240,000 to 7000.

Another writer who deals with the same subject is Hynek. In the *Arch. Bohèm. de méd. clin.*, Prag, tome iv. fasc. 1, he records two cases. In the first the result was favourable. At the commencement of the ray treatment the whites numbered 234,000 (myelocytes, 37 per cent.). The whites steadily diminished. At the end of the first month they were still 143,000, but after the second month they had fallen to 68,000, and after three months to 23,000. At the end of the fifth month the number was 7582, of which the myelocytes formed 0·4 per cent., though mast-cells were still fairly numerous = 3 to 4 per cent. Along with the improvement in the whites, the reds increased from 4½ to 5 millions, and the Hb rose from 82 to 102. The spleen was greatly reduced in size. On stopping the rays, the patient had a relapse, which, however, only affected the blood, as the spleen did not increase in size. A few exposures checked the relapse. In the second case, despite a persistent use of the rays, the blood condition did not improve much. A case of chronic lymphatic leukæmia also failed to benefit in any way. On the other hand, some favourable results have been obtained in pernicious anæmia.

Marmorek's Anti-Tuberculous Serum.

During 1904 several articles have appeared which show that this serum has a favourable action in tuberculosis. The most recent paper is that of Frey. This observer has used the serum since May 1903, and has already given some 350 injections. He gives in detail the treatment of nine cases. The patients were treated at Davos, so that to a certain extent climatic influences also played a part in the good results. But as all the cases were chronic forms, which had previously resided for some time in Davos, it is possible to differentiate the actual results due to the serum. The number of cases is too limited to draw any sweeping conclusions, but several points emerge on examining the records. On the whole, the serum is well borne. Serum rashes occur fairly frequently, but, as a rule, the patient becomes rapidly accustomed to the injections, and tolerance is established. In all cases where there was previously no high fever, and where a local serum reaction does not occur, the injection causes a slight fall of temperature. If there was much fever before the injection, usually the temperature at first rose slightly, but this rise was soon followed by a distinct and prolonged fall. The general action on a pure tuberculous pyrexia seems to be favourable. At the commencement the spit is increased in quantity (sometimes to two or three times the former amount), but this action passes off rapidly, and is followed by a distinct diminution in the quantity. The best method of administering the serum is as follows:—On the first day, 3 c.c. are injected; on the second day, 4 c.c.; third day, 5 c.c.; for the next three days no injections are given: then on the seventh day, 5 c.c.; on the eighth, 6 c.c.; on the ninth, 7 c.c.; on the tenth, 8 c.c. are given. This completes the first series, and a pause of from eight to ten days is made. Then the injections are recommenced with a dose of 8 c.c.; and in another series of eight injections this amount is gradually raised to 20 c.c. Another pause follows, and a further series of injections similar to the last can be started. The quantities to be injected are comparatively large, and hence the site of the injection is of importance. The abdominal wall is not suitable, as coughing will increase any local reaction, and cause considerable pain. The most suitable spot is over the extensor aspect of the upper arm. If the site of the injection be lightly massaged, there is less chance of redness and swelling occurring.—*München. med. Wchnschr.*, 1904, No. 44.

The Utilisation of Carbohydrates and Fats in Tuberculous Subjects.

It is generally supposed that the best way of checking the tissue waste in tuberculosis is by the administration of large quantities of easily absorbable fats. Hence the common use of cod-liver oil. Laufer shows, however, that as savers of nitrogenous material the fats are not so useful as carbohydrates in the form of sugar. He kept patients on a constant diet of 3 litres of milk, and estimated the effect of adding to this diet sugar and cod-liver oil. The addition of 50 grms. of sugar led to a distinct diminution in the output of nitrogen, while the patient put on weight. The oil only diminished the nitrogenous output very slightly, while the weight fell somewhat.—*Bull. gén. de thérap., etc.*, Paris, 1904, November 15.

Treatment of Sciatica.

Lange has obtained very good results from the use of a modified form of Schleich's injection. His procedure is as follows:—At the point of exit of the sciatic nerve out of the sciatic foramen the skin is anæsthetised by the subcutaneous injection of a drop or two of a 1 per cent. solution of β-eucaine in 8 per cent. saline solution. Through this anæsthetised area the needle is inserted, and pushed in till the nerve is pierced. As soon as the nerve is touched, a pain similar to that of an electric shock is felt in all the ramifications of the nerve. This pain is only momentary, as the injection of the eucaine is immediately commenced. In all, from 70 to 100 c.c. of the solution is injected fairly rapidly. The needle is then withdrawn, and the puncture sealed with a piece of adhesive plaster. Even during the course of the injection the pain vanishes from the nerve trunk and tender spots. Afterwards there is usually some complaint of an unpleasant sensation of tension in the injected area, but this passes off in a few hours, though the site of injection may remain tender to pressure for a day or two. Though the amount of eucaine was fairly large (from 1 gr. to 1½ gr.), no alarming symptoms of intoxication have been noted. As a rule, there are no after symptoms, but occasionally slight symptoms occur, *e.g.*, slight nausea and diminished taste-sensation. Sometimes, a few hours after the injection, there is a slight rise of temperature. Of eight cases treated by this method, five were completely cured, two after a single injection, and the remaining three after a second injection. Several of these cases were of long standing, and had been ineffectually treated with other methods. The chief advantage of the injection treatment is the rapidity with which the cure is obtained, and this method should be kept in mind in treating obstinate cases which cannot be controlled by ordinary treatment. As regards the actual curative agent, Lange is not very clear. Manifestly it cannot be the eucaine element alone, since it is certainly swept away in a few hours at latest. Possibly the chief factor is the mechanical action of the relatively large amount of isotonic fluid. This may cause alteration in the nerve, swelling, tearing, etc., which, by the subsequent reactionary inflammation, may effect a cure just in the same way as stretching the nerve is sometimes curative.—*München. med. Wchnschr.*, 1904, No. 52.

MEDICAL JURISPRUDENCE.

UNDER THE CHARGE OF
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The Diagnosis of Death by Drowning.

Although in the great majority of cases where bodies are found in water there is little difficulty in determining with comparative certainty that death has resulted from drowning, yet a diagnosis from post-mortem appearances alone is by no means easy, nor indeed is it possible in many instances, more especially if the body has remained for some time in the water.

Since the days of Casper and his contemporaries, it has been recognised that many of the signs of death by drowning to which diagnostic importance was then attached, may be produced in a body immersed in water after death, and hence are unreliable. Thus, for example, the presence of water, and even of froth, in the air passages and stomach, and the "balloon" lungs or "hyperærie" of Casper," are post-mortem appearances to which unqualified importance cannot be attached. It has been experimentally proved that not only may water find its way after death into the air passages, and even into the air vesicles, but also that solid foreign matters present in the water may do so, thus taking away one of the chief props upon which a certain diagnosis of drowning was frequently founded.

Brouardel and Loye and others have shown that in drowning some of the water which is taken into the lungs passes into the blood, and that therefore the blood in the left ventricle, if death has occurred from drowning, will be found markedly diluted as compared with normal blood or that of a body immersed in the water after death. Various methods have been employed to demonstrate this fact, and recently cryoscopy has afforded a new means of investigation.

In the *Vrtljschr. f. gerichtl. Med.*, Berlin, 1904, Heft 4, Wachholtz and Horoszkiewicz have published an exhaustive paper, entitled "Experimentelle Studien zur Lehre vom Ertrinkungstod," in which the above and other questions connected with the signs of death by drowning are discussed, in the light of the results obtained from numerous experiments upon animals. The authors confirm the statement of Brouardel and Loye, that the aspiration of water into the lungs does not take place to any great extent during terminal inspiratory movements, as described by Hofmann. The majority of authors, including Hofmann, have recognised three stages in drowning—(1) One of instinctive and partly reflex holding in of the breath; (2) a stage of dyspnœa characterised by increased respiratory effort—chiefly inspiratory—and convulsions; and (3) the stage of asphyxia, in which there is unconsciousness and abolition of the reflexes, with no respiratory movements, except just before death, when, as a rule, one or two "terminal" inspirations take place.

Brouardel, on the other hand, recognises five stages—(1) Phase of surprise; (2) phase of resistance to respiration; (3) a phase of deep respirations; (4) phase of absence of respiratory movements, and unconsciousness; and (5) phase of terminal respiratory movements.

As a result of their experiments, the authors have found that the views previously held have been mistaken, and that only a very small quantity of water is drawn into the lungs by the terminal inspirations, and that the third phase of Brouardel is chiefly responsible for the water contained in the lungs in cases of drowning. This fact is of great importance in relation to the varying condition of the lungs often found in such cases.

As regards the dilution of the blood brought about by absorption of the water inspired into the lungs, and to which some authorities have attached great diagnostic importance, Wachholtz and Horoszkiewicz made a large number of cryoscopic experiments on the blood of animals which were drowned under varying conditions, and also upon others which were immersed after death. The conclusion arrived at is, that dilution of the blood in the left ventricle does take place in the former circumstances, and that a considerable difference in $\triangle$ is found in animals which have died from drowning as compared with those which have merely been immersed after death. The cryoscopic results are only reliable, however, when the examination is made within a comparatively short time after death.

The three post-mortem conditions which in the authors' opinion may entitle us to arrive at a diagnosis of death by drowning are—(1) The existence of Casper's "hyperæric," or, as Brouardel calls it, *emphysema aquosum*; (2) dilution of the blood in the left ventricle of the heart; and (3) the presence in the small intestines (in bodies which are still fresh) of characteristic, and thus easily recognised, constituents of the water in which the drowning has occurred.

Those specially interested in the subject should consult the original paper, since it is impossible to give an abstract of the many important questions discussed.

Post-mortem Diffusion of Carbon Monoxide into the Body.

Up till two years ago, the fact that CO was found in the blood of a body which had been exposed to an atmosphere containing CO, such as in an escape of lighting gas, would have been held to afford conclusive evidence that such person had inspired the gas during life. The credit of being the first to question the general acceptation of this axiom belongs to Wachholtz and Lemberger, who, in 1902, published a paper, in which they showed that CO could be demonstrated spectroscopically in the bodies of infants which had been exposed after death to an atmosphere of the gas for half an hour.

Other observers corroborated this statement, and Mérto gave the following signs for the differential diagnosis of ante- and post-mortem entrance of CO into a body:—(1) In cases of post-mortem diffusion, a marked difference exists between the light colour of the anterior surface of the liver and the darker colour shown by deeper lying parts of the organ. In cases of poisoning (inspired CO), the liver has a uniform colour. (2) In cases of diffusion, CO is never present in the choroid plexus, and very seldom in the pia mater. (3) In post-mortem diffusion, the blood of the deeper lying tissues contains less CO than those situated near the surface of the body, whereas in cases of poisoning the gas is found to be equally distributed throughout the whole of the blood of the body.

Strassmann and Schultz (*Berl. klin. Wchnschr.*, 1904, No. 48) have carried out experiments with the view of testing the reliability of the above differential signs, and also in order to determine whether the results obtained with adult bodies corresponded with those found in the case of infants and animals.

They accordingly placed bodies of adults in an air-tight box, through which a stream of lighting gas was led. After a varying exposure to the gas, the tissues and organs were examined and tested for CO.

On the whole, Strassmann and Schultz confirm the statements of Mérto as regards the points of differential diagnosis, but they believe to be of even greater importance in this respect the marked difference in colour which is found in cases of post-mortem diffusion of CO, between the superficial muscles as compared with those situated more deeply. This colour contrast, they think, betokens more clearly than any other sign the fact that the CO has permeated the body from without after death.

They very rightly remark that there is little danger of doubt arising, in the great majority of cases, as to whether death has really been caused by CO, since, when the gas is inspired with fatal effect, it is not only diffused equally throughout every part of the body, but is present in such an amount in the hæmoglobin as to be easily demonstrated by the spectroscope and other tests. On the other hand, it is pointed out that cases of poisoning by CO sometimes occur in which the appearances are by no means typical, and in which the diagnosis of poisoning or of post-mortem diffusion may become a matter of great medico-legal importance. It is interesting to observe that the importance of this very question is receiving practical illustration at the present moment by the inquiry into the death of M. Syveton in Paris.

AN ABSOLUTE METHOD OF CONFIRMING THE EXISTENCE OF DEATH.

In no country does the supposed danger of burial alive appear to be so real as in France, if we may judge by the amount of attention which has been accorded to the subject in French literature during the last hundred years. The discovery of a certain sign of death was for long the ambition of almost every medical jurist, and the Academy of Medicine offered a prize of many thousand francs to the successful discoverer. Interest in the question has died out in this country since the introduction of the stethoscope and the general progress of medical education, and, with the exception of a few faddists, whose morbid imaginations are periodically stimulated by stories of burial alive culled from the Yellow Press of America, no one believes that any real risk exists under ordinary circumstances.

Dr. Icard of Marseille, who, we notice, subscribes himself "Vice-President of the Society of London for the Prevention of Premature

Interment," is not satisfied that the danger is so fanciful as we imagine. He is certainly right when he argues that in times of public panic, such as may arise during the presence of an epidemic of cholera, and when, therefore, it is advisable, for the sake of the public health, to bury bodies as quickly as possible, the chances of premature burial are increased. But even in such circumstances we cannot believe that the danger of premature burial in any civilised country, and more especially in Europe, is more than problematical. Icard is also on safe ground when he advocates the general institution of public mortuaries, and we cordially agree with all he has to say upon this subject, as well as with the plea, urged by him, that all bodies should be examined by a medical man before burial. The latter precaution he does not regard as in itself sufficient to meet the danger of mistakes being made, and he therefore advocates that "la véritable épreuve, l'épreuve infaillible, la seule que mérite une confiance absolue" should be performed in every case of death. This test, of which he is the inventor, consists in injecting into the cellular tissues of dead bodies a solution of fluorescine. If the circulation still persists, then absorption takes place, and the skin and mucous membranes become yellow, and the body has the appearance of intense jaundice, while the eye takes on a superb green colour, "as if an emerald had been set in the orbit."—*Ann. d'hyg.*, Paris, 1904, October.

Arsenic in the Urine of Town Dwellers.

Thomson, having found that the kidney secretion of persons living in Manchester contained arsenic, came to the conclusion that the arsenic must arise from breathing the atmosphere of large towns, since it was present in the urine of those who lived simply and took no alcoholic liquors. He carried out numerous tests of the urine of persons living under various conditions, the results of which confirm his views. He found no arsenic in the urine of four patients living in the Convalescent Home at St. Annes-on-the-Sea, although in a fifth there was a trace equal to $\frac{1}{1100}$ gr. per gallon. On the other hand, in the urine of two children from the Northern Hospital of Manchester, whose diet consisted of only bread and milk, he detected arsenic to the extent of $\frac{1}{400}$ and $\frac{1}{1000}$ gr. respectively. In the case of a third child from the same hospital, whose diet consisted of milk alone, no arsenic was found. Samples of urine obtained from persons living in other towns where the air was likely to be polluted by arsenic, such as St. Helens, Swansea, and Sheffield, all showed the presence of considerable amounts of arsenic; whereas six samples obtained from the Hebrides, where peat and not coal was burnt in the houses, were found to be absolutely free of arsenic. Milk taken from Manchester dairies was also found to contain arsenic. The amount of arsenic found in the above circumstances was no doubt very small, but still the fact of its presence is interesting and suggestive from a medico-legal standpoint. Needless to say, Thomson satisfied himself as to the purity of his reagents.—*Med. Chron.*, Manchester, 1904, December.

DISEASES OF THE EAR, NOSE, AND THROAT.

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A Contribution to the Surgical Treatment of Diffuse Purulent Meningitis due to Middle Ear Suppuration.

Up to a comparatively recent date, it was generally accepted as a fact that a patient who showed symptoms of general purulent meningitis of otitic origin had passed beyond the reach of surgical skill. The same view cannot be held to-day, however. If the sceptic were inclined to doubt the accuracy of the diagnosis in a case of lepto-meningitis reported as cured by surgical interference, it is only necessary to recall the fact that a correct diagnosis can now be arrived at by means of preliminary lumbar puncture. In a recent number of this Journal, we referred to exploration of the spinal canal in this connection.

Sir William Macewen was the first to report the successful surgical treatment of infective purulent lepto-meningitis. In his work upon the pyogenic diseases of the brain and spinal cord, published in 1893, he reports six cases which were successfully operated upon. In all of these the symptoms pointed to lepto-meningitis of an infective kind, and the state of the membranes found on exposure confirmed the presence of purulent meningitis at least localised. Again, out of five patients upon whom operations were undertaken for general cerebro-spinal lepto-meningitis, one was successful. Other writers have since reported cases of a similar nature, so that we can no longer regard every case of general meningitis following ear disease as beyond the reach of successful surgical interference.

A recent contribution to this subject comes from the pen of Lermoyez and Bellin (*Ann. d. mal. de l'oreille du larynx, etc.*, Paris, 1904, October). These writers report two cases of meningitis successfully treated by the surgeon. In both there was suppuration of some duration from one ear. In each case there suddenly supervened acute symptoms indicating the onset of meningitis, and it is interesting to note that in both the diagnosis was confirmed by lumbar puncture. In both cases the treatment consisted in first thoroughly opening up and inspecting the mastoid antrum and cells and the middle ear, in exposing the sigmoid sinus and the dura mater on the floor of the middle fossa. In the second case, in addition to the above procedure, the dura mater was incised, and the temporo-sphenoidal lobe on the affected side was punctured in various directions, with a negative result. In both cases there was suppurative inflammation of the labyrinth, through which structure the meninges probably became infected.

As already stated, lumbar puncture was performed and the existence of meningitis established. It was then decided to treat the meningeal affection by repeating the spinal puncture. In the first case, this was done three times during a period of two months. The symptoms slowly subsided, and a complete recovery resulted. In the second case, spinal puncture was done four times in ten days, and the patient was finally discharged cured. Although the cases are recorded in the briefest way here, they are very fully detailed in the original paper, and their perusal will well repay the reader. It is reasonable to admit that without surgical intervention both would have died.

The authors are of opinion that repeated lumbar puncture should be an integral part of the treatment of otitic meningitis. A large quantity of the cerebro-spinal fluid should be drawn off frequently. The theory of the mechanism of the action of this therapeutic means is explained as follows:—The immediate, but transient, amelioration in the symptoms is due to the relief of pressure on the nerve centres by the extraction of a quantity of cerebro-spinal fluid. The slow but definite cure is to be attributed to the evacuation of a certain number of the microbes and their toxins, and at the same time to their being replaced by a fresh quantity of cerebro-spinal fluid possessing perhaps even a bactericidal action. While the authors are undoubtedly to be congratulated upon the result in the two cases here recorded, it must be remembered that opinions vary as to the value of lumbar puncture in the treatment of such conditions.

The Relation between Non-Suppurative Otitis Media and Facial Paralysis of the so-called Rheumatic Type.

The association of facial paralysis with suppurative middle ear disease has long been recognised. The same statement, however, cannot be made regarding the occurrence of a catarrhal inflammation of the middle ear as the etiological factor in the production of "Bell's paralysis." On the contrary, there is very little to be found in literature upon this connection, and writers apparently have not recognised the possibility of a relationship between facial paralysis and a catarrhal otitis media. Facial paralysis has been subdivided etiologically as follows:—About 3 per cent. of syphilitic origin; 5 to 6 per cent. of a traumatic nature; 6 to 9 per cent. due to suppurative middle ear disease; and from 72 to 75 per cent. caused by "exposure to cold," or, in other words, belonging to the group usually spoken of as rheumatic in origin. The statement that a disease is produced by exposure to cold does not give one a very clear idea of its pathology, nor does the qualifying remark that it is rheumatic in character help to explain the nature of the lesion.

In the *Johns Hopkins Hosp. Bull.*, Baltimore, 1902, Reik of Baltimore called attention to simple otitis media as a neglected factor in the consideration of facial paralysis. He argued that in the majority of cases, if not indeed in all, of facial paralysis of the so-called rheumatic class, an acute or subacute otitis media was an intermediary condition between the exposure to cold and the appearance of the paresis. He was led to this conclusion by the fact that within a very brief period of time he had observed four cases of facial palsy of this type, in which the middle ear was involved in a mild catarrhal inflammation just before the onset of the paralysis. A collection of fluid was found in the tympanum, and its evacuation was followed by a rapid recovery of muscle power.

More recently, Reik has again returned to this subject (*Tr. Am. Otol. Soc.*, 1904, July). The writer was in possession of the records of twelve cases in which the diagnosis of rheumatic facial paralysis was made by perfectly competent observers. In not a single instance did the patient voluntarily tell the physician of any preceding or existing ear trouble, but in ten of them the fact was elicited that the ear had given some discomfort shortly before paralysis of the face appeared. In all the cases, however, there was positive objective evidence of middle ear disease. As a general rule, the middle ear inflammation has not been very troublesome, causes very little disturbance, and passes off without treatment. The patient rarely mentions the preceding ear symptoms, because they have attracted little attention, and he becomes so absorbed in the consideration of the facial condition that he forgets the earlier aural disturbance. The treatment carried out by those who meet with such cases consists in counter-irritation over the mastoid, iodide of potassium, and the application of electricity. In counter-irritation and potassium iodide are found remedies which at the same time remove inflammatory products in the middle ear. The writer, however, advises the employment of incision of the drum membrane as a further and beneficial line of treatment in those cases where, on objective examination, indications for such are found to exist.

Collodion as a Dressing in Intranasal Surgery.

The occurrence of hæmorrhage after intranasal operations may prove very annoying both to the patient and to the surgeon. The latter has been accustomed to depend upon the introduction of plugs of one kind or another to arrest or to prevent the bleeding. These are very uncomfortable and often painful, and certainly tend to the production of sepsis. Further, they cause interference with the process of repair, and on their removal further hæmorrhage is apt to be induced. The tendency at the present time is undoubtedly to avoid the introduction of tampons altogether, and by keeping the patient at rest with the head elevated, by the judicious use of ice, and by the avoidance of hot or stimulating diet, thus to prevent reactionary hæmorrhage. Pischel of San Francisco (*Arch. Otol.*, N.Y., vol. xxxi.) has suggested the application of a collodion dressing to the cut surface of the mucous membrane; and Richardson, in a more recent paper, corroborates the first-named writer's experience (*Laryngoscope*, 1904, September). He has employed it as a dressing in sixty cases, after removal of septal spurs and partial resection of the turbinated bodies. In some a little oozing occurred for a few hours, but he found that the patients were more comfortable and felt better, while the healing process was more rapid. The method of application is as follows:—Cocaine and adrenalin are used in the operation, the tissues being blanched in consequence. After operating, a piece of absorbent wool soaked in adrenalin is placed over the raw surface and allowed to remain for fifteen minutes. It is then removed, and the surface of the wound is wiped dry. A probe dressed with wool is then dipped into collodion, and the raw surface is painted until a film of collodion forms over it. The patient then breathes through the nostril so as to accelerate the drying process. The wound heals underneath this dressing.

PUBLIC HEALTH.

UNDER THE CHARGE OF

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Ice and Cold Storage.

A most interesting and highly valuable report on this subject has been recently prepared by Dr. Hamer, Assistant Medical Officer of Health to the London County Council. From 200,000 to 300,000 tons of natural ice are imported into London yearly from Norway, and from 30,000 to 40,000 tons of artificial ice are manufactured every year in London, and this amount is rapidly increasing. During the first six months of 1904 upwards of 2,000,000 cwt. of fresh frozen beef from America, Australia, and New Zealand, and about 1,700,000 cwt. of mutton, were imported into this country. During the same period about 800,000 cwt. of refrigerated butter, 700,000 cwt. of cheese, £600,000 worth of bananas, and £600,000 worth of eggs, were imported. In 1903 the cold stores of London were capable of accommodating some 2,500,000 carcases of sheep alone. From these figures it is apparent that the production and storage of ice, and the cold storage of food stuffs, are carried on on such a scale as to necessitate sanitary control.

In discussing the subjects of ice-borne disease and the bacteriology of ice, Dr. Hamer refers especially to the work of Fränkel, to that of Sidgwick, Winslow and Park in America, and to the more recent work of Professor Abba, who from his experiments was led to conclude that the micro-organisms of water are not so much destroyed as extruded from ice in the process of freezing, just as foreign substances are extruded in the course of freezing. From a consideration of all the available facts, he is led to the conclusion that the freezing of water cannot be regarded as necessarily giving protection against the conveyance of disease-producing germs by ice produced from specifically contaminated water. He has been unable to trace any allegation as to injury to health by the consumption of meat, or other refrigerated food, except some vague references, notably that of a question in the House of Commons as to the relation between frozen meat and cancer. In that connection the Executive Committee of the Cancer Research Fund expressed the opinion that the consumption of such meat was "not in any degree accountable for the increase in the recorded cases of cancer in this country."

The greater part of the ice used in London at the present time comes from the small lakes and ponds of Norway. These are situated in sparsely populated districts, and the risks of original contamination seem few. The ice is brought over in old sailing vessels, and in the one inspected by Dr. Hamer the members of the crew were housed on deck. Cargo of various kinds, for example coke, may be shipped on the return voyage to Norway. In such a case, the hold, he was informed, would be washed before being again filled with ice. No special precautions are taken to prevent contamination of the ice during its removal to barges from the ship, or during its conveyance to the stores. The carts used for conveyance of the ice are not used exclusively for the purpose, and "there is nothing to prevent a cart in which refuse has been conveyed from being pressed into service as an ice-cart at times of stress."

As regards ice-stores, sometimes a railway arch is used for the purpose, and, in a few instances, brick structures with more or less complete means of insulation. There are, in addition, underground pits or "wells." Some of the stores or wells are situated on gravel, etc., and the water from the melting ice soaks away. In other cases there is a connection with the drain, not in all cases trapped. The ice stored in such places is trodden over with dirty boots during its storage in and removal from the store, and it is generally regarded as sufficient to remove contamination to swill the ice over with water after it has been placed on the cart for delivery to the consumer. "Observations made in the London streets outside fishmongers' premises, restaurants, etc., abundantly demonstrate that there are possibilities of contamination even after the block leaves the ice-cart." There are in London a few factories for the production of artificial ice. In some of these, ordinary London water is employed, and in others distilled water, in its production. Ice made from the latter and sold as crystal ice, commands a higher price, owing to its clearness and freedom from air bubbles. The chief objection from a practical point of view to the use of artificial ice, is that it cannot be produced in such large blocks as Norway ice, and hence does not last so long in store. Protected from contamination during the process of freezing and during subsequent storage and distribution, "distilled-water ice" appears to be the ideal ice.

In connection with cold storage, Dr. Hamer considers there are two points of practical importance which require attention from a public health point of view, namely, the cleanliness of the stores and the purity of the air. The necessity for cleanliness is, as he points out, admitted by practical men, and he quotes from a paper by the engineer of Cologne Slaughterhouse, who advocates the daily cleansing of the floors and passages by swilling, and subsequent removal of the surplus water by means of squeegees. As regards purity of air, it would appear that difficulty has been experienced in some cases in keeping down smells resulting from a dirty condition of the storage chambers, and many of the articles commonly cold-stored are very apt to take up odours.

As regards the use of ice, Hamer is of opinion that the reasonable course would be to abandon the use of natural ice for actual consumption, or for purposes in which it is brought into direct contact with food stuffs, and to substitute for it, in these circumstances, ice made from absolutely pure and preferably from distilled water. He further points out the absolute necessity that the strictest precautions should be taken to ensure that such pure ice does not become contaminated subsequent to its manufacture. He thinks it regrettable that ice is not more used in this country for domestic purposes. That the only shop where ice is usually obtainable is that of the fishmonger, where the "environment," sanitarily speaking, is not all that can be desired, is probably a not unimportant reason for its comparatively rare use.

On the question of the supervision of cold stores, he considers that "what is needed in the interests of public health is not merely that any unsound food in a cold store should be seized and destroyed, but that consideration should be given, in originally designing refrigerating premises, to questions of structure and arrangement having importance in relation to health; and in order to attain this object, it will probably be found necessary in the near future to require registration of all such places. The possibilities of mischief in the case of a cold store are possibly greater than they are in that of a dairy, yet the latter is subject to control by the health authority, while the former is not."

Destruction of Rats and Disinfection on Shipboard.

The question of the destruction of rats and the disinfection of ships, with cargo on board, from plague-infected ports, has been occupying the attention of sanitarians for a considerable time, and Drs. Haldane and Wade, in a very excellent Report to the Local Government Board on the subject, express their views in a very clear and distinct manner. Dr. Haldane witnessed the disinfection at Dunkirk of a steamer of about 3000 tons register, with cargo on board, by the Clayton process. The apparatus, which was on a barge, consists of an iron furnace which burns sulphur, air being drawn through this by means of a Root's blower, and the gases produced are driven through a flexible hose into any part of the ship. A return pipe brings air back from the ship to the furnace. The gas consists of the residual nitrogen of the air and about 15 per cent. of sulphurous acid and a good deal of sulphuric acid in suspension. The process of driving in the gas was continued for about one hour in each compartment. This treatment Haldane states is quite ineffective in destroying rats, mice, and insects, as these were discovered alive when cargo was discharged.

Dr. Wade conducted his experiments in a shed at Blackwall, the main objects being to ascertain—(1) The percentage of sulphurous acid required to kill rats and insects in a reasonable time; (2) its action on pathogenic bacteria, especially plague; (3) the manner in which sulphurous acid and "Clayton gas" penetrate cargo; and (4) the damage to cargo, etc., during the process of disinfection.

His results are briefly as follows:—(1) All rats and insects in a ship would be killed in less than two hours with a uniform diffusion of 0·5 per cent. sulphurous acid. This is readily attained in empty holds, but not in loaded holds, owing to absorption by articles of cargo. (2) Pathogenic bacteria, such as plague and cholera, would require under similar conditions at most six hours' exposure to gas containing 2 per cent. of sulphurous acid. Typhoid bacillus is more resistant, but would require not more than twenty-four hours. Anthrax spores do not appear to be affected by sulphurous acid. (3) Most articles of cargo absorbed a considerable volume of sulphurous acid, which is given up more or less readily on exposure to air. "A bale of wool absorbs at least ten times its volume of the undiluted gas, and a bale of jute about four times its volume, but a bale of cotton probably absorbs none at all. Flour absorbs four and a half times its volume of undiluted sulphur dioxide, a small fraction of which it retains very tenaciously." The non-poisonous constituents of "Clayton gas" penetrate very rapidly into bales, but, owing to absorption, sulphurous acid does not penetrate within a reasonable time. (4) Dry textile fabrics are not, as a rule, affected by sulphurous acid, but are injured by "Clayton gas," owing to the presence of sulphuric acid. From the action of this latter they may be protected by covering with paper.

Metals are unaffected by dry sulphurous acid, but are tarnished by "Clayton gas," but can be protected by paper or a thin coating of whiting. Most seeds and grain absorb sulphurous acid, but after a few months seem unaffected. Food stuffs in a state of powder in many cases have their flavour impaired, the gas being combined as sulphite. The amount thus retained in flour is sufficient to sterilise yeast. Fruit, vegetables, and meat are uneatable after exposure to sulphurous acid.

As regards the choice of a process, Haldane and Wade are of opinion that a process employing sulphurous acid will be that most generally useful. They consider that, where it is desired to destroy rats prior to discharge of cargo, if the necessary apparatus could be supplied and worked at a reasonable cost, the Clayton process would in large British ports be the most useful, although a much more prolonged period of treatment would be required than the *one* hour usually allowed for each hold.

As an alternative to this process, they consider the use of liquid sulphurous acid in cylinders is worthy of further trial, a sufficient amount of gas being employed with proper arrangements to secure its diffusion.

Another method would be to treat only the accessible spaces of a ship with sulphurous acid in some form before the discharge of cargo; to unload with all practicable precautions to prevent rats escaping on shore; and then to treat the empty holds with sulphurous acid so as to destroy rats and insects. This method, though not so perfect, "has the important administrative advantages of being practicable at every port, and of being especially suitable in the case of cargoes liable to damage by sulphurous acid; and it may well be that this plan will be found to give as satisfactory results as more ambitious methods, not yet free from difficulty in their application nor from doubt as to their efficiency."

The Infants' Departments of Elementary Schools.

Dr. Barlow, Medical Officer of Health for Bootle (*Pub. Health*, London, vol. xvi. No. 10), discussing the subject of Infants' Departments in Public Elementary Schools, points out some of the dangers as to the spread of infectious and contagious diseases associated with them, and suggests that the *minimum* age for school attendance should be fixed at five years. In his district, for the last three years 40 per cent. of the scarlet fever cases treated in hospital were between the ages of three and five years, and about 50 per cent. between five and ten. At a moderate estimate, about 70 per cent. of the cases occurred among children who would attend the infants' departments of the schools. About 25 per cent. of the diphtheria cases are between the ages of three and five, and nearly all those of whooping-cough are in children attending infants' departments. While not suggesting that the disease is in every case contracted at school, there are many instances in which children have had no ailments until they commence school attendance, when in rapid succession they have contracted scarlet fever, measles, and whooping-cough. The children aggregated in the often ill-ventilated and indifferently lighted infants' departments, come from all sorts of homes—from the most depraved and filthy to the most highly respectable. Some of the children are clean, and others are dirty, while many are in addition half-starved. Though children are not *compelled* to attend school before the age of 5 years, the ages of those attending the infants' departments range from 3 to 7 years—in some few cases the age is even less than 3 years. They are supposed to come clean to school, but in some instances, where lavatory accommodation is provided, if dirty, their hands and faces are washed with cold water. [Dr. Barlow, in one school which he recently visited, found that two towels per week were provided for the use of 300 girls.]

The advantage of beginning school life before the age of five is not apparent from an educational point of view, and Dr. Barlow considers —(1) That children should not be permitted to attend school until they attain the age of five years; (2) that the hours of attendance (at present five and a half hours per day) in infants' departments should be shortened; (3) that hot and cold water should be provided, and any children coming unwashed should have the operation performed for them, and thus inculcate in them at an early age the elements of personal cleanliness; (4) that the rooms should be as airy and light as possible, with a large playroom attached, for use in wet weather; and (5) that in summer the instruction should be almost entirely in the open air, with a good deal of systematised play. If to these improvements there was added the provision of free meals to the poorest children, who are compelled to attend school, he believes there would be not only a reduction in the number of infectious cases, but also a marked improvement in the general health of the community.

REPORTS OF THE MEDICAL SOCIETIES.

EDINBURGH OBSTETRICAL SOCIETY. — *Wednesday, December* 14, 1904.—Dr. BREWIS, President, in the chair.—Dr. GRANVILLE BANTOCK read a paper "In Defence of the Pessary." He referred to two recent papers on "The Use of the Pessary," by Dr. Macnaughton Jones and by Dr. Giles, and criticised these. He said a displacement, properly so called, was a departure of the uterus from its normal position, hence there was really only one form of displacement, namely, retroversion. Anteversion, not anteflexion, was the normal form of the virgin uterus. The only legitimate treatment of a case of uncomplicated retroversion was that by a properly adapted pessary. He then discussed the principles of such treatment by pessaries, and insisted that failure to effect a cure was very often due to ignorance of these first principles, and also to want of skill. Dr. Bantock deprecated the use of ring pessaries in cystocele and rectocele, and of vaginal pessaries in retro- and anteflexion. He then contrasted treatment by pessary and treatment by operation, pointing out the advantages of the former. The best material of which a pessary could be made was Britannia metal, which could be moulded to any shape. Dr. Bantock formulated the following conclusions: That the pessary properly used and not abused involved no danger whatever, but was worthy of our full confidence; that the charges that have been brought against it could not justly be maintained; that in its results it compared most favourably with the operations which had been substituted for it; and that it was an entire misrepresentation of the case to say that "operative measures do all, and more than all, that pessaries can do, without their manifold drawbacks and risks." Professor Murdoch Cameron believed in pessaries when properly used. He disapproved of the pessary Dr. Bantock had shown for cases of cystocele. He was certain that in many cases it would act as a guillotine on the cervix. He preferred a boat-shaped pessary for cystocele. He sometimes used a $2\frac{1}{4}$ in. intra-uterine stem pessary along with a Hodge in the vagina. Professor Simpson sympathised strongly with Dr. Bantock in the general trend of his paper. He wished to point out that Dr. Bantock had laid stress on the fact that for success with a pessary the retroversion must be uncomplicated, but the uncomplicated posterior displacements were not so very frequent. He preferred vulcanite pessaries to those made of Britannia metal. Dr. Bantock had said there was no danger whatever in the use of a pessary, but he admitted it had to be applied with skill, and only in suitable cases. That held good with every line of treatment, and applied to the operations which were carried out as substitutes for pessaries. There was no doubt that there were many cases in which operative interference was justifiable. There was room for discussion on both sides, and one must not, on the one hand, denounce operative procedures, or, on the other, declare that the pessary was a useless thing. Dr. Berry Hart thought Dr. Bantock had taken up an extreme position with regard to the use of pessaries, and had rather exaggerated their good points. Dr. Hart thought there was a certain field for pessaries, but in future, operations, especially those on the round ligaments, would be more and more adopted. Professor Kynoch thought that with regard to the use of pessaries two things were essential—(1) a correct diagnosis of the condition, and (2) an intelligent idea as to the mechanism of the pessary. He had not used pessaries for forward displacements, but he had found them useful in some cases of backward displacements. With regard to operative interference, the permanent results had not been very satisfactory, and this he attributed to the fact that the patients had mostly been women whose work entailed much standing, millworkers, etc. They had not sufficient rest after operation. Dr. Barbour said that in his experience the pessary did keep the uterus in position, but in the majority of cases the uterus returned to its abnormal position whenever the pessary was removed. He thought the reason was that the pessary did not act upon the fundus but only on the cervix. Much was to be said for operations in cases where patients could not tolerate a pessary, or where the pessary failed, or where the pessary was contra-indicated for some other reason. Dr. J. W. Ballantyne said he could look back on cures effected by the pessary, and also on cases which he could not have cured except by operation. He also pointed out the importance of thorough examination of the pelvis, as complications might exist, and the symptoms not be due to the displacement at all. Where pessaries were necessary, they were not necessarily evil. Dr. Haultain said that, as far as the treatment of uncomplicated retroversion was concerned, the Edinburgh school was at one with Dr. Bantock. It was different with retroflexion. A vaginal pessary was then of no use—or, at most, only in about 15 per cent. of cases was it of any avail—and further operative treatment was necessary. The risk was small, and the shortening of the round ligaments was quite a satisfactory operation. Dr. James Ritchie said it was important to note whether the retroversion was causing symptoms. If not, then no pessary was necessary. Dr. Haig Ferguson thought that Dr. Bantock had not sufficiently pointed out some dangers from the use of the pessary. It was possible to push the uterus too high up, and the broad ligaments became stretched. The patient should never attempt to replace a pessary. If a displacement was causing symptoms, the patient should be placed in the recumbent position, and if this relieved her, then a pessary should be introduced. If the pessary treatment failed, then operative measures should be carried out. He felt that uncomplicated retroversion seldom caused symptoms, and therefore seldom required treatment. In some cases of prolapse he had found Napier's modification of the Cutter pessary most useful. Dr. George Hunter said he had no fear of the sound, and introduced a pessary over the handle of the sound which was keeping the uterus in position. He did not care for metal pessaries, because they induced galvanic action. The President thanked Dr. Bantock very heartily for his interesting paper, and expressed the hope that he would return to them with another communication. He agreed that there was no danger in a properly adjusted pessary, but his objection to pessaries was that one could never say how long a patient might have to wear one.

This indefiniteness made treatment by pessary compare unfavourably with treatment by operation. The patient ought to be allowed to choose. After operating on over a hundred cases, he found that in only 5 per cent. was there any recurrence of retroversion. Dr. Bantock replied, and thanked the Society for the kind reception they had given him.

Wednesday, January 11, 1905.—Professor A. R. SIMPSON in the chair.—Dr. FREELAND BARBOUR read a paper on "Climacteric Hæmorrhage due to Sclerosis of the Uterine Vessels." He pointed out the importance of recognising the causes of hæmorrhage at or near the menopause, and recorded a case of severe hæmorrhage lasting for sixteen weeks in a multipara, æt. 46, for which pan-hysterectomy was performed. The only lesions found on subsequent examination of the uterus were thickening and sclerosis of the capillaries of the mucous membrane and of the arteries of the muscular wall. The literature of the subject was reviewed, and similar cases recorded by Bland Sutton, Reinecke, Pichevin and Petit, and Pozzi and Simmonds were summarised. Dr. Barbour indicated the distinction between these cases and those of "apoplexia uteri," recorded by Cruveilhier and others.—Dr. SCOTT CARMICHAEL read a paper on "The Application of Bier's Hyperæmic Treatment to Gynæcological Disease," and stated the contra-indications and the dangers in certain cases.—Dr. BARBOUR SIMPSON recorded a "Case of Fatal Complete Irreducible Prolapsus Uteri," and showed the specimen.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.—*January* 18, 1905.—Professor CHIENE, C.B., President, in the chair.—Dr. ALLAN JAMIESON showed—(1) A case of psoriasis, illustrating the effect of oxydised pyrogallic acid in treatment; (2) two cases of lupus, treated by the X-rays after a prolonged period of rest.—Dr. CHALMERS WATSON gave a microscopic demonstration of the changes induced in the thyroid gland of animals by a meat diet.—Dr. AITCHISON ROBERTSON read a paper entitled "The Milk Supply of Edinburgh, with Suggestions for its more Stringent Control." He, at the outset, pointed out the extreme importance of the subject of a proper milk supply, from the point of view of public health. General medical practitioners are best able to direct the interest of the public to this question. In determining the freshness of milk, he estimated the percentage of lactic acid present. The higher the percentage of lactic acid, the larger is the number of bacteria. Of thirty-one samples of milk taken in Edinburgh, he found the acidity too high in 54·8 per cent. Tuberculous milk is probably the cause of abdominal tuberculosis in children, and the chances of drinking tuberculous milk in Edinburgh are very great. Jewish children are almost entirely breast-fed, and therefore are much more free from infantile diseases due to milk poisoning. Dr. Robertson gave some particulars of the state of the city cow-sheds. Many are situated in densely populated areas; most of them are dirty, some extremely so. The animals are never out of the sheds even in suburban districts, and some of them are kept for years under these most unhealthy conditions. Little or no attention is paid to ventilation. The wonder is that any of the cows escape becoming tuberculous, under such insanitary conditions. Dr

Robertson concluded by recommending that all city cow-sheds be abolished, and that stringent rules as to cleanliness, ventilation, etc., should be drawn up. On Dr. Robertson's suggestion, a committee of the Society was appointed to investigate thoroughly the conditions of the local milk supply, with a view to improving the existing state of matters.—Dr. HARRY RAINY read a paper on "The Nature of Friedreich's Ataxia." The leading symptoms were first referred to, and then the lesions found in the case under discussion were described. These lesions seem to be a premature disappearance of the nerve elements, either from deficient longevity or from some developmental defect, perhaps associated with imperfect myelin production. The nerve fibres are not strangled by connective tissue; this simply takes the place of the degenerated nerve fibres. In locomotor ataxia we see the result of poisons causing irritative phenomena, the poison being conveyed by the lymph stream, the nerve elements being destroyed by the pressure of this new connective tissue. The paper was illustrated by lantern slides.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.—*January* 9, 1905. —Professor MUIR, President, occupied the chair.—Dr. T. K. DALZIEL and Dr. WALKER DOWNIE described a case of removal of the pharynx and a portion of the larynx on account of epithelioma. The growth was a very extensive one, involving a considerable area of the pharynx in its whole circumference, the posterior wall of the larnyx, and the orifice of the glottis; there was also a large mass of infected glands in the right side of the neck. The operation was performed without hope of cure, but for the alleviation of the miserable state of the patient, and proved much more formidable than had been anticipated. The whole growth was removed. The œsophagus was then detached from the trachea for a distance sufficient to allow of the end being brought out and stitched to the skin of the side of the neck, for the use of the stomach tube. Patient made an uninterrupted recovery. The tracheotomy tube, which had been inserted before the main operation was started, was removed after three and a half weeks. The only trouble met was the constant trickling of saliva from the mouth, there being no other way of escape for it; but this ceased after two months, the salivary glands having stopped functionating. All food necessarily was taken through the stomach tube: it did not affect the secretion of saliva. Patient since the operation has nursed her husband and her son through severe illnesses; but now, after six months of happiness and usefulness, she is dying from pressure on the air passages by a large mass of glands in the right side of the root of the neck. The anæsthetic used at the operation was chloroform.—Dr. J. H. TEACHER and Dr. G. B. BUCHANAN showed a specimen of multiple carcinomata of the intestines. The primary tumour appeared to be that situated in the rectum; there were about twenty nodules of various sizes scattered along the whole length of the colon, and a group in the lower part of the small intestine; beside the latter there was considerable infiltration of the mesentery. The secondary nodules were situated in the submucous layer of the gut.—Dr. HENRY RUTHERFURD showed a specimen of multiple carcinoma of the colon. A carcinoma of the rectum had been removed two years previously.—Dr. D. N. KNOX showed the sac of an encysted infantile hernia, and read notes of two such cases. The specimen was taken from a patient, æt. 72 ; the hernia had been in existence for many years, and was as large as a cocoanut. The other case occurred in a child.—Dr. J. K. KELLY showed a number of specimens of uterine myomata and ovarian dermoids, and read short notes of the cases.—Dr. NAPIER and Dr. JOHN ANDERSON gave an account of a case of patent interventricular septum. The orifice occupied the undefended area of the septum, and measured about 1 inch in diameter. In spite of this considerable defect, the patient enjoyed perfect health up to her seventeenth year; then manifested signs of cardiac weakness, but recovered and remained well until the birth of her first child at the age of 27. She died soon after with symptoms suggestive of aortic incompetence.—Dr. NAPIER and Dr. JOHN ANDERSON described a case of tuberculous meningitis in an adult which simulated enteric fever.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—*January* 13, 1905.—Dr. ALFRED A. YOUNG read notes of cases of perforated gastric ulcer—(*a*) A young man was seized with violent pain in the abdomen while cycling. He was removed to hospital four and a half hours later, when there was diminution of liver dulness and abdominal distension. A perforation was found on the lesser curvature near the cardiac end. No drainage was used. Recovery was uninterrupted. (*b*) A female, æt. 25, was seized with violent pain in the abdomen while drinking lemonade. She was sent to hospital within six hours, when the abdomen was found to be tense and hard, but not swollen. The liver dulness was slightly diminished. Two small perforations were found on the posterior surface of the stomach. No drainage was used, and a good recovery followed. (*c*) A young servant girl was admitted to hospital with the symptoms of perforation of the stomach. The abdomen was opened, but no perforation was found in any part of the alimentary tract. (*d*) A female, æt. 24, was admitted to hospital with a history of symptoms pointing to gastric rupture with recovery a week before, and a second rupture immediately before admission. On opening the abdomen, the stomach was found adherent to the anterior abdominal wall. When the adhesions were broken down, an ulcer as large as the finger-nail was revealed. The patient did well for four weeks, but then developed some friction over the liver. Later, a subdiaphragmatic abscess formed on the left side, and caused her death. (*e*) A servant girl was seized with sudden acute pain in the epigastrium and collapse. She recovered without operation.—Dr. ALEX. M'LENNAN showed two cases of osteomyelitis of the tibia which had been operated upon.—Dr. WILLIAM WATSON read a short paper on the etiology and pathology of scarlet fever.

OBITUARY.

Alexander Lockhart Gillespie, M.D., F.R.C.P.Ed.

One of the most gifted members of the staff of this Journal forms the subject of this obituary notice. After a prolonged struggle against ill-health, following on repeated and severe attacks of influenza, he died with startling suddenness on the eve of Christmas Day. For many months he had of necessity absented himself from professional and social gatherings, so that his death has not left such an obvious gap as would have been the case under other circumstances; but, to those who can look back to what he was in the days of his extraordinary vitality and energy, the sense of what might have been is one of keen disappointment and everlasting regret.

Lockhart Gillespie was cast in no common mould. His personality suggested the eccentricity which is akin to genius. He delighted in exercising his tall and robust frame in walking and mountaineering expeditions, which were found to be no child's play by those who attempted to follow his lead. He revelled in hard work of all kinds, and showed himself to be indefatigable in the pursuit and assimilation of knowledge. He had a vanity in observing the results of his industry as ingenuous as it was pleasing, and, child-like, he was pleased with little reward.

His bent was towards the physiological aspects of medicine, and he took the keenest interest in research. His wide knowledge of the literature, and his own work in the laboratory and wards of the hospital, brought him into prominence as an authority on both normal and abnormal digestion, and most of his writings centred around these subjects. Of these the best known are his "Natural History of Digestion," and his "Manual of Modern Gastric Methods"; and it is well within the mark to say that these made for him a great reputation, and added to that of the Medical School to which he belonged. In evidence of the versatility of his talents, it may be noted that he was an expert in meteorology, a gifted rhymer and writer of songs, both lay and professional, and an artist in water-colours of conspicuous ability. As a journalist he had few compeers, especially in the vivacity and originality of his style, so that any contribution from his pen, although anonymous, was quickly identified. In the long roll of distinguished men who have written for this Journal, during the hundred years of its existence, a very high place must be awarded to him whose loss we deplore so much.

The great-grandson and the grandson of well-known Edinburgh physicians, and the son of a surgeon and consulting surgeon to the Royal Infirmary, Lockhart Gillespie inherited, besides his talents, many traditions and many friends, and held a number of public and other appointments. His devotion to his young charges at Donaldson's Hospital is a pleasing memory to those interested in this noble charity, and the presence of a number of them around his grave in the Dean Cemetery was a touching testimony of their regard for his memory.

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EDITORIAL.

The Thoms Will Case. THIS case, which has just been decided in the Court of Session, is of interest from several points of view. Here is a man who, being about to die, thinks it well to devise the larger moiety of his worldly goods for the benefit of the Church. Not so very long ago this would have placed him upon a pedestal of holiness; to-day, it appears likely to cloud his memory with the ban of insanity. The plea was strengthened by evidence which showed at any rate a degree of eccentricity that gave distinct colour to the main contention. This opens a vista of inquiry as to how far the Church is indebted in the past to victims of religious mania; not by the calculating "Fire Insurance" of the wealthy penitent, but by the perfervid zeal of the wretch oppressed with the might and dreadful power of Holy Church. Leaving this train of thought severely alone, however, the case has more than one point of importance. It may, for instance, be very helpful in putting to an end the mischievous belief, so firmly rooted in the legal mind, that insanity and delusion are one and the same. "No delusion, no insanity," is the parrot cry of the legal voice; if the converse be accepted by them as it has been, distinct delusion, yet a sound disposing mind, it may go far to dispel the other fixed idea. A candid friend of the Faculty, greatly daring, might venture further to suggest that this case furnishes an instance of the truth conveyed in the saying that "hawks winna pike oot hawks' een." It is not every day that the sight may be seen of one legal luminary after another stepping meekly enough into the common witness-box, and swearing by Almighty God that in his opinion deceased was of sound mind. *Prestige* is still a thing of weight, and it is not to be supposed by the vulgar that any occupant of the Bench can possibly be other than of sound mind. So revolutionary an idea would be too terrible to contemplate.

Apart from these considerations, however, the finding seems of some importance, as a departure from the position so often taken up, that the possession of, or by, an *idée fixe* is, on the face of it, sufficient proof of insanity, and as such a bar to power of devising. It has often been led from expert witnesses that this is the case, that the existence of a delusion showed so grave a disturbance of the mental balance that a general mental impotence might and ought to be assumed. The man in the street, or his congener the general practitioner, will tell of any number of cases to prove the opposite, from the believer in the Lost Ten Tribes to the Members of the Society for Psychical Research. Between these two there are any number of shades of belief, more or less irrational and absurd, which are held by persons who in other respects are sound and useful citizens. It may be said that the delusions in the case in question were of such a nature that all of them might pass as merely eccentricities of humour, as laboured attempts at being funny. This, however, does not appear quite to fit the facts. There is nothing humorous in the fixed idea that one is the hereditary chief of an obscure Highland sept, or that one's natural heir, a well-living man, is a graceless ne'er-do-weel. We have seen men in lunatic asylums with fixed ideas far less indicative of insanity. This case, therefore, may be taken as showing that a man, in whose mind the existence of insane delusions is not denied, may yet be of a "sound disposing mind," and may have confidence that his testamentary dispositions shall not be interfered with. Such a finding should be received with general satisfaction. 'Tis a mad world at best, and which of us has not had at times his delusion, his fond hope, never to be realised, his fleeting vision of the Grail? Are these to stamp him as the mental inferior of the dullard beside him who browses like any other beast, never looking up from the fodder? Is the "fixed idea" any more than the imagination run wild, and is it not better to mount Pegasus, even at risk of fall, than to be for ever bound to the dullard earth? And if it be true that they may laugh who win, there may be a smile, in the Shades, on the face of him who once was the well-beloved Sheriff of Ultima Thule.

Science and Reticence.

IN his volume on "Education," that masterly introduction to a rational life, Mr. Herbert Spencer asks and answers the pertinent question, "What knowledge is of most worth?" and in one particular sentence focusses the trend of a certain aspect of modern culture: "Men who would blush if caught saying Iphigénia instead of Iphigenía, or would resent as an insult any imputation of ignorance respecting the fabled labours of a fabled demi-god, show not the slightest shame in confessing that they do not know where the Eustachian tubes are, what are the actions of the spinal cord, what is the normal rate of pulsation, or how the lungs are inflated." The relative worth of knowledge has long been regarded as a question of profound, but is not and has never been considered a subject of practical, importance, and in fact it may be laid down as a fairly safe generalisation, that the nearer man approaches Truth, the more persistent is the desire to close his eyes or to bury his head in the sands of sophistry or the clouds of fallacy. Mankind will swear passionate devotion to fiction and the poetry of existence, but will only permit himself a very mild flirtation with Truth and the facts of life. This condition of affairs may spring partly from fear, but chiefly from a false reticence, inspired by the idea that the lifting of the veil may destroy those fond illusions which make life bearable to the majority. "We are born in a dream, and we live in a dream, and we go in a dream to die." And so mankind goes on picking its daisies and gathering its fungi on the hillside, careless of the ominous sounds which ought to prompt him to remember that he is standing on the shell of a dormant volcano, which at any moment may burst forth and overwhelm him and all his pretty foolings. Education is still counted as a synonymous term with decoration, not as a means of lessening the handicap in the great struggle for personal, social, and national existence. And so we turn in vain to the reviews and journals for practical guidance on the great questions underlying our personal and national existence. True enough, from time to time the editorial *chef* distributes a few scientific lollipops to appease the ever-recurring hunger for the diet of fact, but steadily refuses to convert his "sweety-shop" into a rational feeding house. Any writer who has made an ingenuous attempt to approach the editorial sanctum armed with the clean manuscripts of science, will tell you of his experience. It is the same old story—plenty of room for the criticism of the latest divine poet of eroticism, never-failing space for discussions on Christian Science and predestination and parochial divinities, columns to spare for adventures in the dustheaps of literature, but a closed door for science, as long as it refuses to degrade its mission by false sentiment, pseudo-learning, and plausible hypothesis. There is not one single lay journal in this country that dares to frankly discuss those stern questions of the physiology of society that lie at the very root of the national stability. Frankly outspoken where fiction is concerned, false reticence veils the face of journalistic science, and so the tree of knowledge is paralysed at its very roots. An illustration of this fact is supplied by the knowledge that the article which we are glad to publish this month on the question of "The Decrease of the Birth-Rate" was declined by two of the leading reviews, on the plea alone that the veil of reticence must not be lifted, for it is better that man should be kept blind, than that he should be shocked. Accordingly it comes to this, that only those who know may be told. Scientific men are quite accustomed to the facts treated of in the paper we have mentioned, and accordingly there is no harm to be done in their instance, but those for whom the article was especially intended must not be made uncomfortable by the face of Truth without the mummers' deceptive mask. And so society will, Maenad-like, twine flowers in its hair and go from bad to worse. Two volumes which have recently come to hand, and which will be dealt with in future issues, suggest a similar state of affairs. Where is the review that would publish an intelligent précis of Senator Kaminer's "Health and Disease in relation to Marriage and the Married State," or Lydston's "Diseases of Society and Degeneracy"? Both these works of scientific research and philosophic reflection should be in the hands of all intelligent laymen, but the fact remains that these ingenuous persons have little means of realising the fact that such books exist. These volumes appeal to the scientific intelligence of the nation, and are not mere literary ventures entered upon by men who have their eyes on the morbid taste of the community. Are we then to deduce from this condition of affairs the fact, that the average readers of the established reviews are either intellectual or moral philanderers—the one class looking merely for intellectual suggestion, the other for a less pleasing form of the same? Have our editors turned themselves into keepers of ostrich farms, and do they regard those who are not ostriches as bawds? We await an intelligent answer. Let us not be misunderstood. Reticence is an essential quality of all literary work, but it must only regulate the medium in which the truth is expressed, it must never bury that truth in such a nebula that the eye cannot see it. The health of the community, the constructive endurance of the "human machine," surely counts first in the interest of mankind, but the lay editors have different views, and so, like children, we will go on playing with pebbles on the seashore, until the tide comes in and overwhelms us.

National Optimism.

At the root of the whole matter lies that curious phenomenon, an unassailable national optimism, which has its virtuous side, but which may turn out to be a common case of national swollen head. In all crises we invariably cling to the old creed, that we are bound to "muddle through," and that the triumphs of the past are not merely the results of scientific causes, but evidences of a special providence watching over the stability of the nation. We are very sceptical of such a one-sided dispensation on the side of the powers that be. History, as well as mathematics, has proved that two and two make four, and that, if the fountains of the national life are dried, a famine will result, or if they are poisoned, a pestilence. The policy of *laissez-faire* has never succeeded in the long run in doing anything else but landing its professors on the rocks. But need we be surprised? Has not history also taught that national disaster has generally been synchronous with national optimism? A great crash may follow on a condition of pessimism, but it tends to lead to eventual renaissance; but the nations of the world who have been content to live in a nebula of false optimism have fallen, never to rise again, at least in the category of world-wide powers. To the great moral issues at stake at the present time the people of this country are practically indifferent. The growing practices of polygamy and polyandry *in camera*; the question of the birth-rate as dealt with in the article round which these notes are written; the spread of disease undermining the national constitution with its sequel,—a frightful increase in the degenerate; the physiological absurdities practised by the weaker sex under the name of a rational revolt; the general ignorance of the simplest facts of physiology, amongst not only the uneducated but the presumably cultured;—all these are writings on the wall in the cipher of colossal warnings, but are treated as mere playbills, to amuse and interest, not to guide. At what point the tide is to turn we know not, and it is difficult to prophesy. There is much sanity in modern life, there is evidently an unusual amount of common sense. But there is a recklessness which can only be explained by the fact that there is a smaller price set on the value of life. It is excessively difficult to preach altruism and the gospel of the social contract. It is almost impossible to make the young realise to the full the meaning of the responsibility which attaches to them as individuals. Few are able to realise, that every physical indiscretion on their part reacts eventually on the body social. A man cannot stand alone. He is an atom in a great mass, for the stability of which he is partly responsible. These are the commonplaces of sociology, and yet the rampant individualism of to-day suggests the fact that they are utterly disregarded or unknown. Herbert Spencer, as far as the majority are concerned, might never have written a line. The disease that is affecting us is, in fact, the deadly one of irresponsibility, and until that is cured we are not likely to get any further in the great scheme of social and physiological amelioration.

Students as Assistants at Operations.

TRADITIONS and customs are apt to survive in Edinburgh long after they have disappeared in other centres of medical education. One of these is the reliance which is placed in the assistance afforded by students in the work which is carried on in the surgical theatres of the Infirmary. It is not so very long ago when all that was expected of the dresser or instrument clerk was that he should arrive at the time fixed for the operation, that he should control the movements of the patient, hold a basin, or hand without formality an instrument from a tray. The wheel has turned, and any one who is to participate, even in a subordinate capacity, in the performance of an operation must be so educated that he does not constitute a possible source of infection; and this applies to him who hands a sponge or instrument, as it does to him who transfers one or other to the tissues of the patient.

The question might well be raised, Is the participation of students in the work of the theatres under existing conditions at the Royal Infirmary compatible with that accuracy of technique which is essential to the successful practice of surgery? Theoretically, this question might be answered without hesitation in the affirmative, but when we consider the application of it in practice we are on less certain ground. What objection can be raised to the co-operation of students in the surgical work of the theatres? There is certainly none so far as the students themselves are concerned, for in ability and devotion to work they are at least on an equality with those of any medical school with which we are acquainted. The objections belong to the conditions under which they are expected to discharge the duties entrusted to them. Students attending the surgical work of the hospital are overburdened with classes and other duties, which, so far as they are able to judge, are at least of as much importance as those to which we especially refer. They arrive at the last moment before an operation is timed to commence, and amidst considerable stress and hurry attempt to overtake the various duties expected of them. They are not sufficiently trained and drilled, nor is there any guarantee forthcoming that they have mastered either the principles or the practice of what they are about to undertake, while those who are the chief performers are unable to exercise the necessary supervision because they are fully occupied with what is immediately before them.

The exigency of numbers also plays a part, for as many men as possible must be passed through the régime of the theatre. As soon as a selected number of students have became efficient and reliable assistants, they are moved on to make room for a batch of novices.

If the above be true of what obtains during the session and during so-called hospital hours, when the pick of the students is at the disposal of the surgeon, it can be imagined what obtains during the night and during the long vacation. It not infrequenly happens that the services of individuals of whose capacities and knowledge the surgeon is completely ignorant, must be requisitioned on short notice to render assistance in what may prove to be difficult and critical operations.

ORIGINAL COMMUNICATIONS.

THE OPERATIVE TREATMENT OF CHRONIC SUPPURATION IN THE FRONTAL SINUS.

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(Plates XIV.-XV.)

From several points of view the subject of operative interference upon the frontal sinus is one of very considerable interest to the surgeon, and, along with the surgery of the other nasal accessory sinuses, the history of the gradual development of the operation is an engrossing one. It is not my intention to describe here in detail the steps of the various procedures which have been devised and carried out upon the sinus, but rather to discuss some of the broad principles which should guide us in dealing with these often troublesome cases.

Indications for Opening the Sinus.—Before discussing the lines of treatment that may be adopted, it will be advisable to briefly consider the indications which should guide us in opening the sinus. Recently there has been a tendency, at any rate in some quarters, to follow more conservative methods, and perhaps to refrain from operative interference unless there is present some definite indication for so doing. The somewhat numerous fatalities which have occurred after operation, the fact that relapses are not infrequently met with, and the possibility of considerable disfigurement attending a radical procedure, are factors which must naturally cause the surgeon to weigh carefully the circumstances connected with each case before he urges operation upon his patient. The time, I hope, may come when a more extended experience, along with improvements in our operative technique, will make it possible for us to confidently recommend operation in every case, with the almost certain knowledge not only of obtaining a permanent cure, but of doing so with the smallest amount of disfigurement.

In the meantime, we must recognise certain symptoms and local appearances which make surgical interference imperative. These are, symptoms suggesting cerebral complication; pain usually of the nature of headache, which may be of a very severe and persistent type; distension of one of the bony walls of the cavity; or, lastly, the presence of a fistula discharging externally. If the general bodily health of the patient is evidently affected by the continued suppuration, or if he should suffer from great mental depression and anxiety regarding his condition, a state of affairs which sometimes exists in these cases, we should not refrain from urging the operation.

We frequently, however, meet with cases in which there are no symptoms present, save a persistent nasal discharge of greater or lesser amount, which may cause comparatively little annoyance to the patient. Are we to make it a routine practice to operate in all cases of this kind? Under circumstances such as these, we should take him into our confidence, lay the pros and cons before him, and leave the decision so far as possible in his own hands. In the event of the patient purposing to reside where surgical skill could not be readily obtained, or if he meditated applying for life insurance, we ought certainly to influence him in favour of operation. The question whether applicants for life insurance suffering from purulent discharge from one or more of the nasal accessory sinuses, should be accepted on ordinary terms has not hitherto received special attention. It is, however, a matter worthy of the consideration of the life assurance offices.

Intracranial Complications.—It seems to me that our mental attitude towards the class of case in which a purulent discharge is practically the only symptom, would be considerably strengthened by a better knowledge of the risk of the possible occurrence of intracranial complications. Can we arrive at any definite conclusions regarding this? Opinions differ as to the relative frequency of the onset of complications of this kind. Comprehensive data upon the subject are difficult to obtain, consequently it is not easy to make a definite statement upon the matter. It is true that since the publication of the valuable monograph of Dreyfuss, in 1896, more attention has been paid to the nasal cavities as a primary seat of infection; but for a long time no systematic post-mortem examination of the nose was made in cases of death due to septic intracranial mischief. We have not here the same data to reason from as in the case of the ear, and a comparison between the relative frequency of the occurrence of endocranial complications, following aural and nasal suppuration, is hardly possible. The difficulty previously experienced in examining the accessory sinuses at the autopsy, without disfiguring the face, was doubtless one reason for neglecting this region. Possibly brain abscesses which have been regarded as "idiopathic" may have had their origin in nasal suppuration. All observers will, I think, agree in saying that suppurative middle ear disease is a much more common affection than suppuration in the nasal accessory sinuses. This will still be admitted even if we exclude the large number of children amongst whom ear suppuration is so prevalent, a group of patients which cannot fairly be used for comparison, because in them the nasal sinuses have not yet fully developed. A point which is less easy to determine is, whether the same proportion of endocranial complications result from nasal as from middle ear suppuration, because we do not possess sufficient statistics to enable us to answer this with any degree of exactness.

The post-mortem evidence of intracranial infection is somewhat meagre. Newton Pitt,[1] who gives an analysis of 9000 autopsies, found only one case of cerebral abscess due to nasal suppuration; the patient had had nasal polypi and ethmoid disease. Gowers[2] considers that chronic nasal disease is an occasional but rare cause of cerebral abscess. He states that in 240 instances of brain abscess, the nose was the primary seat of infection in six, but the sinuses implicated are not specified. Treitel[3] found in 6000 post-mortem examinations three cases in which the intracranial mischief had its origin in the nose, namely, two of cerebral abscess and one with purulent meningitis. Wertheim[4] had access to the records of 10,394 autopsies; amongst these were 127 cases of endocranial suppuration. Fourteen were stated to be of nasal origin, but in six only was the exact mode of infection specified. In only three of these, again, was the frontal sinus the probable primary source of the complication.

The above figures contrast with those obtained post-mortem, in connection with middle ear disease. Thus, in Pitt's examinations, there were fifty-seven cases of intracranial mischief consequent upon aural suppuration. In the 240 cases of brain abscess, referred to by Gowers, 102 were secondary to ear disease. Of twenty-one brain abscesses occurring in Treitel's statistics, seven were otitic in origin.

As the subject of this paper relates to the frontal sinus only, we will restrict ourselves, in discussing the *clinical* evidence bearing on this point, to the complications arising in connection with that cavity. If the other sinuses were included in the figures, the total would undoubtedly be considerably increased, as a considerable number of fatalities have now been recorded in connection with the sphenoidal and ethmoidal cells. Owing to the fact that different writers on this subject repeat the observations of previous authors, there is considerable overlapping of cases, and a consequent risk of over-estimating the total number.

In 1895, Kuhnt, in his work upon the frontal sinus, collected seventeen cases of intracranial complication associated with suppuration in that cavity. In twelve of these the frontal sinus only was diseased, while of the remaining five there was associated suppuration in other accessory cavities. Dreyfuss, in his monograph published in 1896, reported nineteen cases of a like nature following frontal sinus suppuration. These latter, however, are not to be regarded as being all additional to those reported by Kuhnt. Killian, in his article upon the frontal sinus in Heymann's "Handbuch der Laryngologie," published in 1900, brings the total number of frontal sinus complications up to thirty. Since that date I have been able to add twelve additional cases not included in the statistics of the above-named writers, making the total number forty-two.

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[1] *Brit. Med. Journ.*, London, 1890, vol. i.

[2] "Diseases of the Nervous System," Second Edition.

[3] *Berl. klin. Wchnschr.*, 1896, No. 51.

[4] *Arch. f. Laryngol. u. Rhinol.*, Berlin, 1901.

So far as I have been able to ascertain, these are the main facts at our disposal, and therefore, unfortunately, we cannot draw any definite conclusions as to the percentage of cases of frontal sinus suppuration in which intracranial complications arise. That they do occur, there is ample evidence to show; and there is the possibility that they may even occur more frequently than the above figures would indicate. Looking, therefore, to this fact, it is our duty to keep in view the possibility of intracranial complications when considering the question of operation. If we are not going to operate upon our patient, we must endeavour to maintain free drainage into the nose, and not permit him to pass altogether from our observation.

Intranasal Treatment.—There is no doubt that, in some cases, the more aggravated symptoms are relieved, and the state of the patient becomes more satisfactory, when the intranasal condition is carefully attended to. If nasal polypi are thoroughly removed along with the anterior end of the middle turbinated bone, and the anterior ethmoidal cells opened into, better drainage may be established and the outflow of secretion rendered more easy. We have all probably seen cases in which the carrying out of this procedure has made the patient's condition more comfortable. In what proportion of cases a cure, as has been alleged, may result from intranasal treatment of this kind, is a matter which might form an interesting point for discussion. I am of opinion that the number of cases must be very small, because both the anatomical configuration of the sinus and the pathological changes which occur in its lining membrane in chronic suppuration, militate against the chance of a cure merely from better drainage through the nose.

Hajek,[1] however, takes a more favourable view of this line of treatment. Out of twenty-seven cases of chronic suppuration, treated by intranasal methods, nine were completely cured: in eleven a muco-purulent secretion remained; while in seven no improvement was effected. In all of them, with three exceptions, the headaches disappeared. There were thus nine cases healed, while in eighteen the discharge continued. If, however, freer drainage from the sinus can be established in this way, it is possible that the risk of serious intracranial complications may be lessened.

Operative Procedure.—Having decided upon operation, what procedure are we to adopt? Notwithstanding the numerous operations and their various modifications that have been described, many of which are associated with the names of different surgeons, there are only two main principles involved. First, the sinus is opened from without and drained into the nose, but its cavity is preserved; and secondly, the sinus is obliterated by the removal of one or more of its bony walls, so that a cavity no longer remains. If the first principle is adopted, whatever be the precise mode of procedure, we still have a sinus remaining, which may subsequently become the seat of fresh infection. Little or no disfigurement follows this method of operating. If, however, we carry out the second principle, and obliterate the sinus, we remove all possibility of further suppuration in this locality. At the same time, by doing this we encounter a drawback, namely, a varying amount of disfigurement, which in this region of the body is one of no small moment, and which sometimes, indeed, assumes very considerable proportions. The questions, therefore, which have to be considered are, what cases, if any, are suitable for treatment by preserving the sinus? and, secondly, how may we best obliterate the cavity, and at the same time produce the minimum of disfigurement? thirdly, can any method be adopted by which we may combine all the advantages associated with each of these procedures, and at the same time eliminate their defects?

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[1] "Nebenhöhlen der Nase," 1903, Aufl. 2.

PRESERVATION OF THE SINUS.—*The Ogston-Luc operation.*—It is quite unnecessary to present a detailed description of the operation so widely known under this title. Suffice it to say that it consists in opening the frontal sinus through its anterior wall (the size of the opening being relative to the dimensions of the cavity), in careful curetting of its interior, in establishing a large communication between the sinus and the nose, at the same time destroying the anterior ethmoidal cells in the region of the naso-frontal duct. Drainage into the nose is ensured through the naso-frontal aperture, and the operation is completed by immediate suture of the skin incision.

Probably no operation, or a slight modification of it, has been more generally accepted and performed upon the frontal sinus, yet more extended experience, and a careful consideration of the results obtained from it, go to show that the class of case which is really suitable for this procedure appears to be a comparatively small one. This is due mainly to anatomical causes. If we consider the variations in the configuration of the frontal sinus, its varying extension upwards upon the forehead and outwards towards the temporal region, and, not the least important, backwards along the roof of the orbit, we can readily appreciate the difficulty that there is in thoroughly inspecting the cavity through a somewhat limited opening in its anterior wall. If we bear in mind, further, that the frontal sinus is not always a simple chamber, but, on account of the existence in many instances of incomplete bony septa and partitions in its interior, giving rise to one or more diverticula or recesses, it is difficult, and sometimes even impossible, to deal effectively with the whole cavity in this way. These recesses are commonly met with in the external angle of the sinus and frequently in its horizontal or orbital portion. Both these situations are from their anatomical position very difficult of access. In consequence of this, pus and diseased mucous membrane may be overlooked, and foci are left to cause fresh infection of the surface which has been curetted. Recesses may also exist in the vicinity of the septum, between the two sinuses; and the non-recognition of these may cause the operation to fail.

Plate XIV. Figs. 1 and 2 illustrate some of these points. Fig. 1 is an example of a case in which a recess, formed by a partition lying close to and parallel with the septum, led to an unsuccessful result. The patient had been operated upon by two surgeons, by the Luc method, and I believe that on each occasion the narrow mesial recess was overlooked and proved to be the cause of subsequent re-infection of the whole sinus. It was not until the entire anterior wall was removed, and a radical operation performed, that its existence was determined. It was then found that the cavity (right sinus) extended into the left supra-orbital region. This latter diverticulum had also doubtless been overlooked at the previous operation. Fig. 2 represents another sinus which had been twice operated upon without success, by opening, curetting, and draining the cavity. After removal of the whole anterior wall, at a subsequent operation, a well-marked diverticulum, which had doubtless escaped observation, was discovered in the external part of the orbital portion of the cavity.

Another difficulty which may present itself, and which, if not recognised, must obviously lead to the failure of the operation, is the existence of a communication between the two sinuses through the intervening septum. Such an inter-communication, although it may doubtless occur, is not a usual anatomical condition, and I have never observed the septum to be incomplete in the normal skull. As the result of a pathological process, however, the communication is sometimes found in cases of chronic suppuration, and the opposite sinus becomes infected through it. It may not be easy to recognise the existence of such a communication through the limited opening which is made in the Luc operation, consequently the other sinus continues to discharge its purulent contents into the cavity which the surgeon has endeavoured to render aseptic.

There is still another point which calls for attention, since it may prove a source of weakness in this method of operating, and that is the difficulty of gaining sufficient access to the anterior ethmoidal cells. In a proportion of cases one or more of these cells extends outwards into the orbital roof beneath the floor of the frontal sinus. I have elsewhere dwelt on this point.[1] Under these circumstances, considerable dissection, not only of the anterior wall but also of the floor of the sinus, is necessary, before these cells can be recognised. Suppuration in the ethmoidal cells may be a concomitant of chronic suppuration in the frontal sinus. Consequently, in seeking to establish a free communication between the sinus and the nose, an attempt must be made to destroy or remove the diseased ethmoidal air spaces, which may otherwise prove a source of re-infection. As we shall see later, the importance of dealing with these has led Killian to resect the ascending process of the superior maxilla, and thus gain more ready access to them.

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[1] *Edin. Med. Journ.*, 1903, vol. xiv. p. 299.

Association of frontal and ethmoidal suppuration.—It will not be out of place at this stage to examine some of the published records bearing upon the association of frontal and ethmoidal suppuration, and learn how frequently the two conditions co-exist. When we come to study such figures as I have been able to obtain relative to this point, we find that the experience of surgeons varies. Thus Jansen[1] in ten instances, Röpke[2] in thirty-seven, Killian[3] in sixteen, and Luc[4] in four instances, found the ethmoidal cells affected along with the frontal sinus. Walker Downie[5] in six cases has noted ethmoidal disease in five of them. On the other hand, Lermoyez,[6] in thirty-six instances in which the frontal sinus was affected, found only two with associated ethmoidal disease; while Herbert Tilley,[7] in twenty-five diseased frontal sinuses, has noted six with ethmoidal suppuration. Milligan[8] has described, in forty cases, affection of the ethmoidal cells in eighteen; while of twenty diseased frontal sinuses, observed by myself, the ethmoidal cells were also affected in twelve. In Wertheim's[9] post-mortem observations, the ethmoidal cells were found affected in seven out of twelve cases.

We find, on adding these figures together, that in 206 instances in which chronic suppuration of the frontal sinus existed, the ethmoidal cells were implicated in 117, *i.e.*, in 56 per cent. It is difficult, however, to assign a cause for the great disproportion observed between the figures recorded by such observers as Jansen, Röpke, Killian, and Luc on the one hand, and those of Lermoyez and Tilley on the other.

Results of the Ogston-Luc operation.—We have thus far indicated the anatomical features which may conduce to the non-success of the Ogston-Luc operation. It is necessary, however, to consider whether operative results justify us in regarding this procedure in an unfavourable light. In endeavouring to collect reliable statistics upon this point, a difficulty was at once met with, namely, information as to the exact method adopted by each operator. In Milligan's recent paper, already quoted, we are left in doubt in some instances as to the kind of operation performed. This is unfortunate, as he gives us the results obtained in forty cases operated upon; but, the method adopted being frequently omitted, we are unable to make use of the valuable material which he has given us. The kind of drainage employed, and the treatment of the skin flap, must be regarded as factors of considerable moment in the success or non-success of the operation. It is obviously unfair to adversely criticise a recognised operative procedure, when in some not unimportant details the operation has differed from the lines laid down by the originator of it. For this reason the figures which follow are not large, as I have limited myself to those cases which undoubtedly appear to have been treated by the Ogston-Luc method. They may possibly be considered by some to afford too limited a basis for reliable deductions to be drawn from them. In all there are fifty-five cases. Of these, seventeen are reported by Lermoyez in the paper already referred to, nine of which were cured and eight relapsed. Lambert Lack,[1] who does not take a favourable view of this operation, treated eleven cases by this method, not one of which was completely successful. In four of them, headache and pain were relieved; but the discharge, although much diminished, continued. In five no relief was obtained. Two cases terminated fatally. Luc himself has been disappointed with his results, having found it necessary to operate again more than once in some of his cases. An analysis of ten cases which came under my own care shows that six were completely successful; the cavity in all of these did not exceed ordinary dimensions, and in two of them it was of specially small size. In two there was also associated ethmoidal suppuration. Of the four unsuccessful cases, one had associated ethmoidal disease, while two others had been already operated upon twice; neither of these had ethmoidal suppuration.

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[1] *Arch. f. Laryngol. u. Rhinol.*, Berlin, 1894.

[2] *Journ. Laryngol.*, London, 1899.

[3] *Arch. f. Laryngol. u. Rhinol.*, Berlin, 1902, Bd. xiii.

[4] *Ann. d. mal. de l'oreille, du larynx, etc.*, Paris, December 1902.

[5] *Glasgow Med. Journ.*, March 1899.

[6] *Ann. d. mal. de l'oreille, du larynx, etc.*, Paris, November 1902.

[7] *Lancet*, London, 1900, vol. ii.; and *Trans. London Laryngol. Soc.* March 1904.

[8] *Brit. Med. Journ.*, London, 1905, vol. i.

[9] *Arch. f. Laryngol. u. Rhinol.*, Berlin, 1901, Bd. xi.

We find, however, that the operation has met with more success in some hands. Kuhnt[2] operated successfully in three cases, Grünwald[3] had six cases all successful, while Barbon and Furet[4] had no failures in eight cases. In summarising these fifty-five cases, we find that there are thirty-one cures and twenty-four failures; that is to say, a percentage of fifty-six successful operations. We shall see later how these results compare with the statistics of the obliteration method. Luc[5] himself now admits that the operation associated with his name has not given general satisfaction, either in his own hands or in the hands of other operators. He considers it an ideal operation, however, only in certain cases, namely, when the dimensions of the sinus are limited, provided that the fronto-nasal canal is roomy; when the ethmoidal labyrinth is free from suppuration; and, lastly, when the inflammation, without being actually acute, has not persisted for more than a few months.

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[1] *Edin. Med. Journ.*, 1902, vol. xi.

[2] "Die entzündlichen Erkrankungen der Stirnhöhlen," 1895.

[3] "Die Naseneiterungen."

[4] *Ann. d. mal. de l'oreille, du larynx, etc.*, Paris, June 1899.

[5] *Ibid.*, December 1902.

Operation for Obliterating the Sinus.—Up to this point clinical evidence has been very much against the performance of an operation which does not permit of thorough inspection of the sinus, and the possibility of establishing a free communication with the nasal cavity by destroying the anterior ethmoidal cells, should they also be diseased. In the majority of cases, therefore, we must seek for an alternative procedure, by the carrying out of which the chances of failure are diminished. Experience goes to show that this is to be attained by obliterating the cavity of the sinus. In order to bring this about, it is necessary to remove the whole of its anterior wall, and also to a greater or lesser extent the floor. The removal of the floor is a valuable addition to the operation, I think, in those cases in which there is considerable extension of the sinus along the orbital roof. The removal of all the bone between the sinus and the soft tissues of the orbit is a guarantee that any ethmoidal cell extension into the roof of the orbit has been destroyed. By such a procedure we are able to thoroughly inspect the whole interior of the cavity, however large it may be, and no recesses can escape our observation. Further the septum between the two cavities can be examined, and, as I have already said, the presence of ethmoidal cell extension into the orbital roof will thus not be overlooked. By this means, also, easier access is obtained to the ostium frontale, and the diseased ethmoidal labyrinth can be more freely dealt with. Finally, we have the satisfaction of knowing that there is no longer a frontal sinus in which to fear recurrence of suppuration. In other words, therefore, if an operation of this kind, or some slight modification of it, such as the individual operator may think fit to apply, be performed, we eliminate all the defects and weaknesses of the less radical procedure.

Results of the obliteration method.—If we now consider the curative results from the more radical methods, that is to say, in those cases in which the cavity of the sinus is obliterated, we find that the figures compare very favourably with those obtained after the Luc operation. My statistics are based upon the results obtained in sixty-seven cases. Kuhnt has reported ten successes in ten cases operated upon, and Röpke[1] was successful in all of his twenty-five cases. Lermoyez[2] had eleven cures in eleven cases of chronic frontal sinus suppuration; five of these had already been operated upon by the Ogston-Luc method, but had had recurrence of suppuration in the cavity. Lambert Lack[3] operated successfully in nine cases, and expresses the opinion that this method of dealing with the sinus is the most reliable. Hajek[1] obtained eight cures in nine cases, and Herbert Tilley[2] has recently published three cases, in all of which ethmoidal suppuration was present, and in which an excellent result was obtained. Of the sixty-seven cases here referred to, a cure was effected in all but one, *i.e.* in 98 per cent., showing a very marked improvement in the results when compared with the percentage of cures by the previous method. These figures are striking; and though the total number of cases recorded here is not large, yet collectively they furnish sufficient evidence as to the respective merits of the two operations, so far at any rate as regards the cure of the condition. The question of the relative amount of disfigurement resulting from the two methods of operating will be discussed later.

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[1] *Journ. Laryngol.*, London, 1899.
[2] *Op. cit.* [3] *Op. cit.*

Post-operative mortality.—The comparison of the relative value of these two methods of operating is not complete without consideration of the fatalities which have occurred after surgical interference. Probably there are few surgeons with experience in dealing with this class of case, who have not had the misfortune either to lose a patient themselves, or to see a fatal result occur in the practice of one of their colleagues. A very considerable number of deaths have followed operation upon the frontal sinus, and on that account we must necessarily regard it as one of the major operations in surgery. It is impossible to state, with any degree of certainty, how many fatalities have occurred, as there must be cases which remain unrecorded. I have succeeded in collecting twenty-four in which death followed operation upon the frontal sinus; of these, sixteen have already been published, while I have information regarding eight others. Possibly others have been recorded, but I have not been able to obtain access to the literature dealing with them. The fatalities have been noted by Luc,[3] Lermoyez,[4] Tilley,[5] Lack,[6] Rudloff,[7] Jaques,[8] Knapp,[9] Gibson,[10] Thiele,[11] Bryan and Gruening.[12] It is possible that, in the cases reported by the two last-mentioned observers, the infection may have spread to the intracranial structures from the ethmoid cells, which were affected along with the frontal sinus.

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[1] "Nebenhöhlen der Nase," Leipzig, 1903.

[2] *Trans. Laryngol. Soc. London*, March 1902.

[3] *Arch. de laryngol., de rhinol.*, Paris, 1899; and *Journ. Laryngol.*, London, 1899.

[4] *Ann. d. mal. de l'oreille, du larynx, etc.*, Paris, November 1902.

[5] *Lancet*, London, 1899, vol. ii.

[6] *Edin. Med. Journ.*, 1902.

[7] *Journ. Laryngol.*, London, 1899.

[8] *Rev. de laryngol.*, Paris, August 1903.

[9] *Arch. Otol.*, N.Y., 1903.

[10] *Am. Journ. Med. Sc.*, Phila.

[11] *Arch. f. Laryngol. u. Rhinol.*, Berlin, 1903.

[12] *Med. Rec.*, N.Y., 1904.

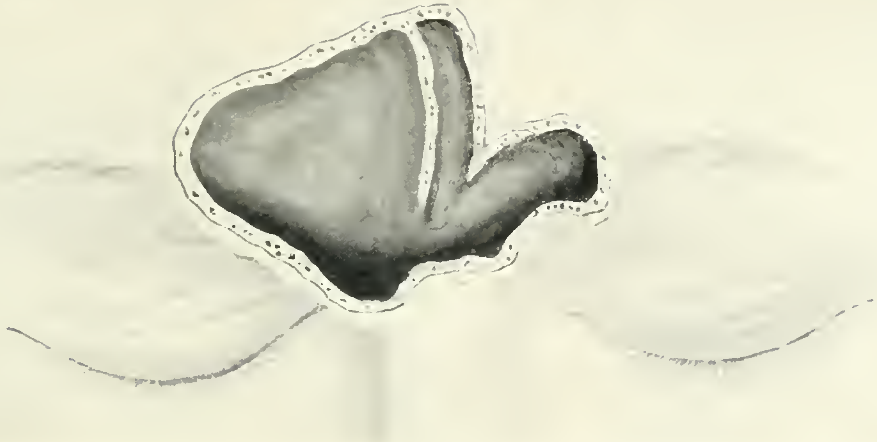

FIG. 1. Right frontal sinus with diverticula.

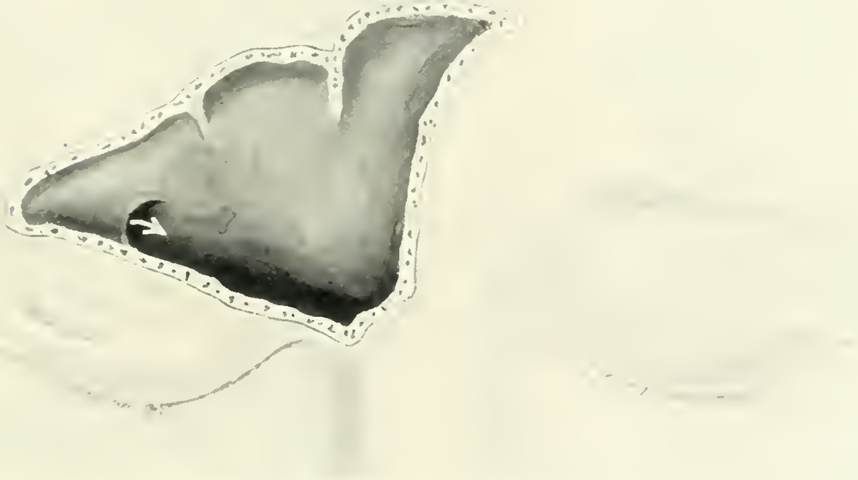

FIG. 2.—Right frontal sinus with diverticulum.

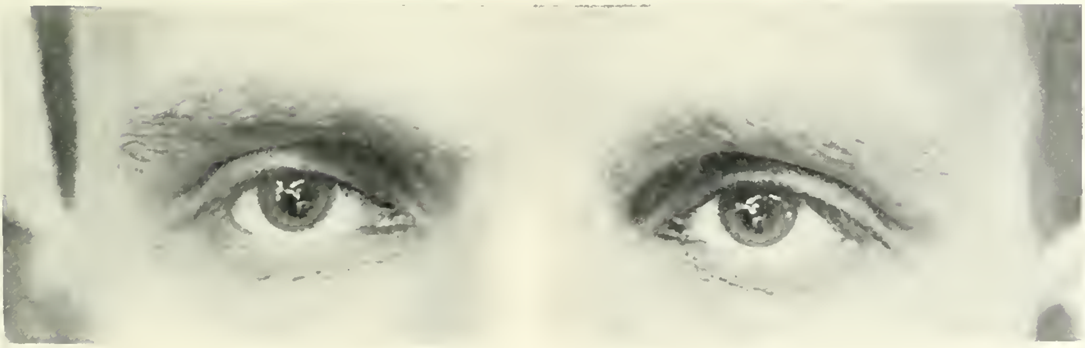

FIG. 3.—After operation on left frontal sinus.

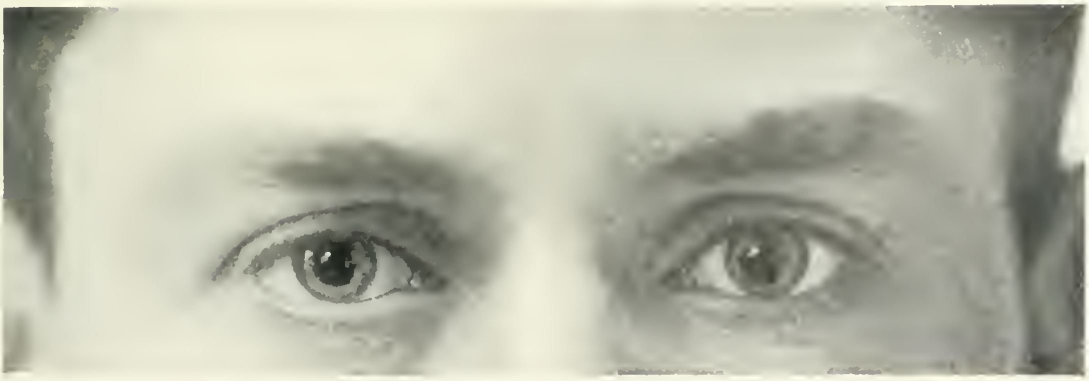

FIG. 4.—After operation on left frontal sinus.

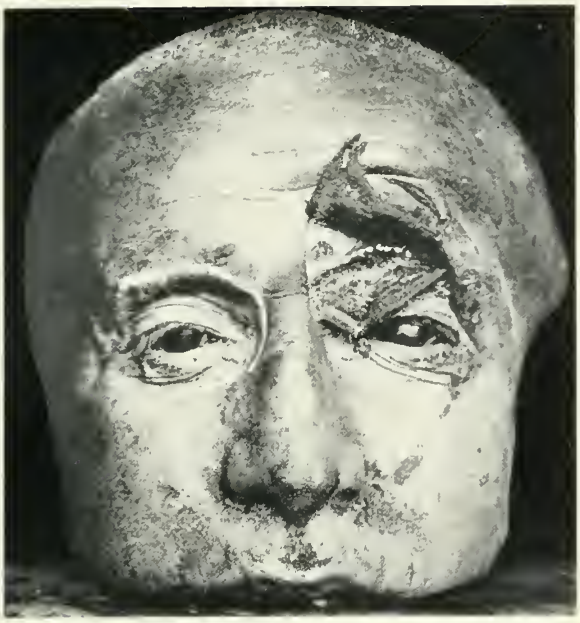

Fig. 5.—Killian's incision on right side; frontal sinus opened on left side.

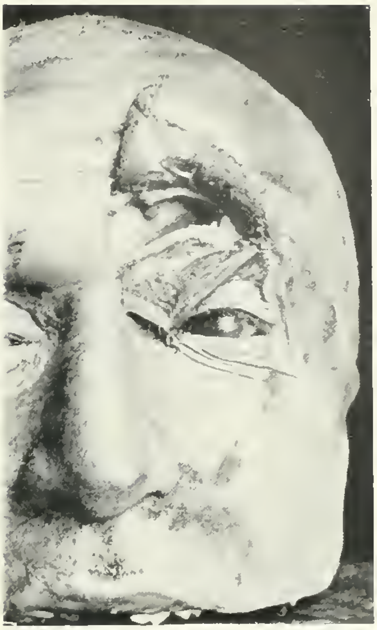

Fig. 6.—Anterior wall of sinus removed; supra-orbital margin defined.

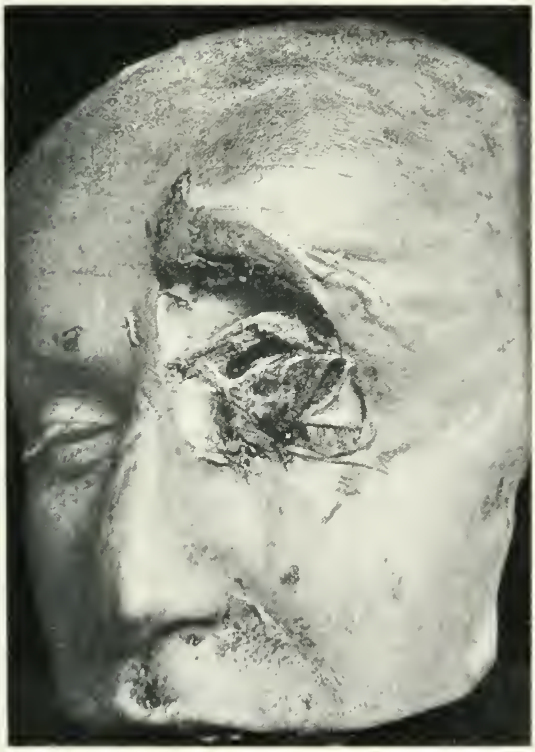

Fig. 7.—Removal of anterior wall and floor of sinus; frontal process of superior maxilla exposed.

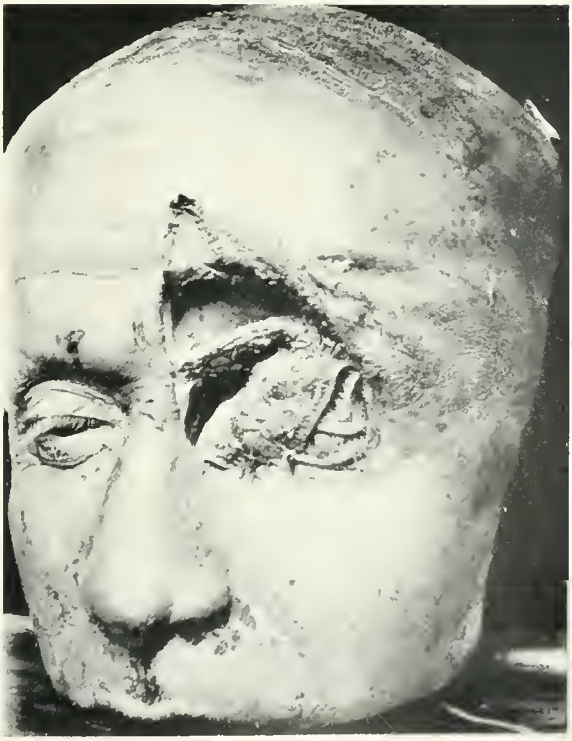

Fig. 8. Supra-orbital margin left as a bridge.

The clinical picture presented by the majority of these cases is very similar. The infection which finally leads to the fatal result occurs, I think, at or within two or three days of the operation. The diploë of the frontal bone are invaded by the organisms, and an osteomyelitis is in the first place set up. The infection spreads thence, on the one hand, through the outer table, giving rise to subperiosteal abscesses beneath the scalp; on the other hand, it passes inwards, and may subsequently give rise to extradural or subdural abscess, general meningitis or cerebral abscess, the patient succumbing to one or more of these conditions, or to a general septicæmia or pyæmia, after a varying number of weeks or months. Once an osteomyelitis of the frontal bone has become established, the prospect of cure by surgical interference is apparently hopeless. It commences insidiously, and, before the general symptoms and local signs are such as to permit of an exact diagnosis being arrived at, the disease in the bone has made considerable progress. Even the most active treatment, and apparently thorough removal of the bone in the neighbourhood of the sinus, fails to stem the slow but steady advance of the inflammatory process. In a case of this nature occurring under my own care, no untoward symptom supervened until the tenth day after the operation, when the temperature, which was previously normal, suddenly rose, and some œdema of the scalp was visible above the limits of the sinus. Subperiosteal and extradural abscesses formed, and, in spite of extensive removal of the frontal bone, the patient finally died from pyæmia after three months' illness. In Tilley's case, also, symptoms developed ten days after the operation upon the sinus, and death took place after a protracted illness, lasting for nine months.

An analysis of the fatal cases affords instructive reading, when considered from the point of view of the nature of the operation performed. Of the twenty-four fatal cases, there are twenty-three in which I have information regarding the operative procedure adopted. Of these, seventeen, or 74 per cent., occurred after opening and draining the sinus (Ogston-Luc). Further analysis of this number brings out the fact that in fifteen, death followed a single operation; while in two, more than one operation had been performed, owing to the failure of the first to effect a cure of the suppurative condition. Of the remaining six of which we have notes, all proved fatal after an operation for obliteration of the sinus, *i.e.* 26 per cent.; in three of these, however, simple opening and draining had been previously performed without success, the more radical method having been a secondary procedure. It is evident, therefore, that a considerably larger proportion of fatalities have occurred after the Ogston-Luc operation than after the operation of obliteration. I think that the question of a second operation upon the same patient is one of some importance relative to the mortality. We naturally ask ourselves, is the patient placed in a worse condition for further interference if the previous operation has proved a failure? Of the comparatively small number of fatalities quoted above, no fewer than five of the patients had been subjected to two or more operations by the Luc method. Three of these subsequently underwent the obliteration operation, and died. I am therefore inclined to think that multiple operations exercise a detrimental effect, although I know of cases which have successfully undergone the simpler procedure, and have been finally cured by more radical methods.

The presence of a discharging fistula in the forehead, as the result of failure to cure the sinus suppuration, must place the patient in a less satisfactory condition for further interference than if the skin remains unbroken. In the fatal case under my own care to which I have already referred, there remained, as the result of two unsuccessful Luc operations, a fistula in the line of the eyebrow, discharging pus. At intervals there was considerable phlegmonous swelling of the scalp covering the lower part of the forehead, and it is possible that the bone forming the anterior wall of the sinus had already become the seat of septic infection. If we can satisfy ourselves that a patient, already unsuccessfully operated upon, is more prone to fatal complications, then we have still another argument against the Ogston-Luc procedure. Not only does it give a greater number of failures, but it jeopardises the non-successful case, which subsequently requires more radical treatment.

In order to avoid the occurrence of such fatalities, it is very necessary to try and determine when and how the infection takes place which leads to the spread of the septic process. A careful study of failures in the past should be the stepping-stones to future success.

I am of opinion that, in those unfortunate cases in which death results, the inflammatory condition is lit up during the operation. The granulation tissue in the sinus, which has hitherto formed a barrier to the invasion of the organisms, is broken down; and thus a path is opened, which readily admits of their further spread into the frontal bone. I am now in the habit of using small flushing spoons while removing the diseased mucous membrane, a constant stream of warm sterile saline or boracic solution thus constantly playing upon the surface of the bone. In this way an attempt is made to remove all septic material at once from the wound, and thus to lessen the risk of further spread. If the patient's head is at the same time kept dependent, the lotion readily flows over the vertex, so that the eyes are not exposed to the risk of infection. When curetting of the sinus is not complete, we have a state of affairs present which must necessarily increase the chance of a dangerous complication arising. Foci of septic material are left, which may readily contaminate the newly exposed bone in the neighbourhood. It is possible, as Lack has suggested, that the organisms may invade the anterior osseous wall of the sinus, and thence spread directly into the vertical portion of the frontal bone. The density of the bone forming the anterior wall of the sinus varies considerably, and in some instances presents a markedly diploic appearance. In neither of Lack's fatal cases was the mucous membrane of the sinus curetted, yet an osteomyelitis of the frontal bone supervened, and death followed from intracranial complications. Tilley blames defective drainage into the nose, coupled with complete closure of the skin incision, as causes of disaster in these cases. Most surgeons will probably agree with the necessity of establishing free drainage, a point which has from time to time been insisted upon by the majority of writers on the subject. In two of the unpublished fatal cases, the operator informs me that no sutures were placed in the skin incision. In one case he attributes the fatal result to defective nasal drainage; in the other, numerous ethmoidal cells extending into the orbital roof were overlooked, and bone sepsis was thus set up.

Do statistics show that the mortality occurring after operation is less in the last two or three years than it was previously? Is a riper experience leading to uniformly better results? While I think we may certainly answer the second question in the affirmative, one must admit that of the twenty-four fatal cases which have formed a basis for my remarks, no fewer than nine have occurred during the last two years. It is not my intention to over-estimate the grave risks which may attend operation upon the frontal sinus, nor would I have it inferred that because any one procedure has been followed by a certain number of fatalities, that consequently it must no longer be attempted in suitable cases. Further, unfortunate accidents of this nature should not lead us to decline to operate upon our patients, should they desire relief at our hands. On the contrary, our failures should stimulate us to better work, because there is no better school than the school of experience. They should be the means of ensuring more certain success in the future, and we should do all in our power to improve the operative technique, and at the same time be careful to carry out the most rigid asepsis in its minutest detail.

Disfigurement.—There is, however, another very important aspect of this subject to be considered, and that is the question of disfigurement. No operation upon the frontal sinus can be undertaken without that aspect of the case presenting itself, and it is mainly for this reason that the question has been so much debated. Were it not for this important consideration, much that has been published on the subject would never have been written. If the surgeon is given a free hand by his patient, and is asked to effect a cure regardless of disfigurement, there is no question that he will prefer to obliterate the sinus entirely, and thus make any further trouble impossible. It is only occasionally, however, that the position of affairs is so satisfactory, the question of age, sex, and social relations, as a rule, playing an important part. Consequently it is our duty to seek to obtain the maximum amount of success with the minimum of deformity. There is no doubt about the advantages of the operation performed according to the method first practised by Ogston-Luc. The preservation of the anterior wall of the sinus and the immediate closure of the eyebrow incision may be followed by such excellent results, that in the course of time it may be impossible to observe any difference between the two sides of the face. The accompanying photographs (Plate XIV. Figs. 3 and 4) of patients operated upon by the Luc method illustrate this. It is unfortunate that equally satisfactory curative results cannot be more frequently obtained by a method which produces so little disfigurement.

With the obliteration of the sinus, on the other hand, and the necessary removal of its anterior osseous wall, the contour of the forehead is to a certain extent destroyed. There consequently follows a greater or lesser degree of disfigurement, depending more upon the antero-posterior depth of the cavity than upon its superficial extent. The deeper the sinus the greater is the amount of the sinking in of the overlying soft tissues, and consequently the more pronounced is the subsequent depression. There is undoubtedly, however, considerable difference to be observed in the results obtained, a difference depending partly upon the natural contour of the forehead in different individuals, upon the depth of the sinus, and, to some extent also, upon the possibility of the surgeon being able to leave more of the bony floor in one case than in another. The skin incisions, if made in the line of the eyebrows, or, when a vertical incision is employed, in one of the natural hollows, are practically invisible, so excellent is the healing in this vascular region.

Diplopia.—It is sometimes advanced as an argument against interference with the osseous floor of the sinus, that diplopia or double vision may be produced from interference with the pulley attachment of the superior oblique muscle. This complication undoubtedly occurs in some cases. In one case, detachment of the pulley may be followed by temporary interference with vision; in another, no such effect is produced. It does not, however, as a rule, appear to be more than a transitory complication; and we must not regard it in the light of a contra-indication to radical treatment. My own experience would lead me rather to regard detachment of the pulley as a matter of comparatively slight importance.

We have now discussed more or less thoroughly the arguments for and against carrying out one or other of the two principles formulated in the early part of this paper. We naturally ask ourselves, whether there is not some procedure which will give us all the advantages which attend the obliteration method of operating, and which will at the same time give, as near as possible, the results as regards appearance obtained by the method associated with the name of Luc. Such an operation, if applicable to every case, would certainly be ideal, and would terminate the many discussions which have been held upon this subject.

Osteo-plastic operation.—By means of an osteo-plastic operation, an attempt has been made to overcome some of the difficulties, and Schönhorn, Czerny, Brieger, and Winkler have practised such a procedure, by raising a bone flap from the anterior wall of the sinus. Hajek, too, in the recent edition of his work upon "The Accessory Sinuses," 1903, describes this method. Having previously defined the limits of the cavity by means of the X-rays, he proceeds to raise a triangular flap of bone from the anterior wall along with the super-imposed soft parts. Good inspection of the interior of the sinus is thus obtained, and the small pockets and recesses can be dealt with. In order to gain access to, and deal with, the anterior ethmoidal cells, he has found it necessary to partially resect the nasal process of the frontal bone, and he finally completes the operation by introducing a large drainage tube into the nose. The bone flap, with its superficial covering, is replaced, and the drainage tube is worn for a period varying from six to twelve weeks.

In a sinus treated in this manner the healing process is necessarily slow, considerable time being required before the new epithelium completely covers the interior of the cavity. The results as regards appearances are good, but as the sinus is not obliterated, there still remains the possibility of reinfection. Hajek does not give any detailed account of his results, but merely states that, since he adopted this method of operating he has obtained better results than previously. He carefully guards against making any definite pronouncement regarding the value of the procedure, or as to the duration of the cure after osteo-plastic resection. In two of his cases operated upon in this way, and treated for some months, recurrence of suppuration took place eight and nine months respectively after the operation.

Killian's operation.—There still remains for our consideration another procedure, which, although first described in 1895,[1] has only recently come more prominently before our notice.[2] I refer to the operation which is associated with the name of Gustave Killian of Freiburg. In the author's opinion it fulfils the two main requirements in these cases more than any other method does, namely, the radical treatment of the disease with a minimum of disfigurement. Satisfied upon these points himself,

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[1] *München. med. Wchnschr.*, 1895, No. 28.

[2] *Arch. f. Laryngol. u. Rhinol.*, Berlin, 1902, Bd. xiii.

Killian is prepared to recommend and carry out treatment even in cases of suppuration where there is no discomfort experienced by the patient beyond the presence of slight nasal discharge. Should a more general and extended experience prove equally satisfactory, it is possible that in the "Killian operation" we have at last obtained a method of dealing with chronic frontal sinus suppuration, in large and complicated cavities, which may be regarded as the method *par excellence.*

The whole sinus, with its recesses and partitions, is thoroughly inspected, and the cavity is almost completely obliterated by the resection of its anterior and inferior bony walls. Further, by the removal of the ascending or frontal process of the superior maxilla, excellent access is obtained to the ethmoidal cells, and a large opening of communication is thus made between the frontal sinus and the nasal cavity, so that good drainage into the nose can be established. In order to reduce to a minimum the deformity which may follow so extensive a dissection, the supra-orbital bony margin is preserved as a bridge between the gap formed by the removal of the anterior sinus wall on the one hand, and the floor on the other. Plate XV. Figs. 5, 6, 7, and 8 represent the main features in connection with the Killian operation, and are photographed from dissection upon the cadaver.

The results of this procedure have proved eminently satisfactory, both as regards the cure of the condition and the comparatively slight disfigurement. This has been the case not only in Killian's own hands, but also in the hands of others who have employed it. Thus we find that of twelve cases operated upon in this way by him, all, with one exception, healed satisfactorily. The failure was due to the fact that the opposite sinus discharged through an aperture in the septum, and so reinfected the area of operation. After this had been attended to, a cure resulted, so that we may regard all the twelve cases as successful. Luc,[1] who has of late adopted this method of operating, informs me that of ten cases treated in this way, nine were cured. In the tenth, a fistula remained at the inner end of the scar, which he was unable to close, owing to the patient being obliged to leave Paris. Thiele[2] reports six cases: in four, a cure was obtained after one operation; in one, owing to failure in removing a part of the floor of the sinus, and a pocket being thus left, a second operation was necessary, but at the time of writing sufficient time had not elapsed to admit of his recording it as a satisfactory result. In the remaining case, death occurred apparently from meningitis four days after the operation. This case is included amongst the deaths already referred to. Milligan reports three cases: two were cured, and the third was progressing very satisfactorily at the date of publication. Siebenmann[1] has been thoroughly satisfied with the results which he has obtained by this method. Eschweiler[2] speaks very highly of the procedure. He employed it in eight cases, obtaining a complete cure in seven of them. In one, apparently, the result was not perfect. Of the thirty-nine cases above specified, in which Killian's method was practised, thirty-four were cured, or 87 per cent.

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[1] *Ann. d. mal. de l'oreille, du larynx, etc.*, Paris, December 1902.
[2] *Arch. f. Laryngol. u. Rhinol.*, Berlin, 1903, Bd. xiv.

The results, as regards appearances, have also proved to be very encouraging. By leaving the supra-orbital margin, the contour of the eyebrow is preserved, and the depression which attends complete removal of the anterior and inferior walls of the sinus is undoubtedly minimised. Killian considers that there is less disfigurement after the removal of both the anterior and inferior walls, than when the anterior only is resected. The orbital tissues take a considerable share in the filling up of the sinus area, so that the sinking in of the soft parts covering the vertical portion of the sinus is thereby reduced. One cannot fail to be struck while carrying out the operation, even upon the cadaver, with the ready manner in which the orbital fat rises up into the horizontal part of the cavity, upon removal of the bony floor of the sinus.

If the cavity is a deep one, it is impossible to avoid some degree of flattening above the supra-orbital margin; in order to diminish this as far as possible, it is advisable to bevel the cut edge of the anterior wall at the upper margin of the sinus. In some cases where the sinus is deep, and the septum between the two cavities is consequently prominent, the scalp may not fall satisfactorily against the posterior osseous wall of the sinus, so that a small cavity may persist close to the septum. When the operation is performed upon both frontal sinuses, Killian advises the removal of the intervening septum, on the ground that the depression which follows presents a more uniform appearance than when the septal ridge is preserved. Both Luc and Thiele comment favourably upon the appearances in their cases. The removal of the ascending process of the superior maxilla does not lead to deformity. It has been urged against the Killian method, that the incision carried downwards on to the face is a disadvantage, but the skin wound there, like a vertical incision on the forehead, which is sometimes practised in frontal sinus operations, heals so readily that no appreciable scar is left.

The remarks which we have already made regarding the occurrence of diplopia apply equally in this connection. It may occur as a temporary drawback, but I am inclined to the opinion that there is an exaggerated fear regarding the production of this complication. Killian met with slight transient iritis in three of his cases, but by the prophylactic use of atropine this can be avoided. I have never met with this complication after extensive operations upon the sinus. Great care, however, should be taken to handle the eye as little as possible, and to avoid any undue pressure upon it. The operation no doubt exposes the eye to the risk of injury, and is more delicate to execute, being also more laborious, and occupying a longer time; but if less disfigurement and a permanent cure can be obtained by it, such disadvantages must not be regarded as contra-indications.

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[1] *Ibid.*, 1904, Bd. xv.

[2] *Arch. Otol.*, N. Y., 1904, vol. xxxiii.

If exception is to be taken to any one point in the procedure, it seems to me that it lies in the fact that the cavity is not completely obliterated. A space remains behind the inner end of the bridge, which continues to secrete and discharge a certain quantity of pus, until a new lining membrane, growing upwards from the nasal cavity, has completely covered the granulations. The duration of the healing process is consequently considerably prolonged, and two, three, or more months may elapse before it is completed. Luc pays considerable attention to the after treatment of these cases. The crusts which form in the fronto-nasal region are removed daily, and a tampon of wool, soaked in peroxide of hydrogen or in a weak iodine solution, is carried upwards through the nose into the cavity which is left. He lays considerable stress upon the necessity of keeping the scalp in close apposition with the posterior wall of the sinus by means of a firm bandage, maintained for a considerable period of time, a procedure which I would certainly endorse. It is very necessary that this apposition of surfaces should be accurate, so that the upper part of the cavity may be completely obliterated.

General Conclusions.—Certain general conclusions may be drawn from a study of this subject. In the first place, it will be admitted, I think, that there is no single method of procedure applicable to all cases of chronic suppuration in the frontal sinus. When the sinus is a small one, and we feel confident that we have thoroughly inspected it through the aperture made in the anterior wall, and when no ethmoidal disease co-exists, simple opening and draining by the Ogston-Luc method may prove satisfactory. In these cases it is very necessary to maintain the communication with the nose by means of a drainage tube for a very considerable period. In every other class of case I would recommend and practise obliteration of the sinus. In this way the whole cavity can be thoroughly inspected, and its recesses and bony partitions dealt with; better access to the ethmoidal cells can at the same time be obtained by resecting the frontal process of the superior maxilla, and a large communication can be made with the nose. If the sinus is shallow and the supra-orbital region is not prominent, it is unnecessary to preserve the bridge of bone. If more extended experience will show that the operation suggested by Killian provides satisfactory curative results, with less disfigurement than is associated with other radical methods, then we probably have at our command an operative procedure which will take the first place. Whatever be the exact radical procedure adopted, there is no doubt of the value of removing the ascending process of the superior maxilla, in order to gain better access to the ethmoid labyrinth and nasal cavity.

I am fully aware of the fact that this paper cannot be regarded as a complete exposition of the subject. There are some points which have only been briefly touched upon, and there are others which have not been considered at all. I have endeavoured to record the broad principles which should guide us in dealing with these important, and often troublesome cases. Questions of detail depend to some extent upon individual operators, and are points which may be conveniently taken up on a subsequent occasion.

It seems to me that the time has come when a collective investigation into the results of surgical interference upon the frontal sinus, and possibly also upon the antrum, might prove of the greatest value. Lack of sufficient opportunity has hitherto prevented me from undertaking this; but if we could obtain a really accurate report of the chronicity of the cases, the number of the sinuses affected, the surgical method employed in operating, the treatment of the wound, and the results obtained as regards cure, relapse, the amount of disfigurement produced, and a fatal issue, we would possess a valuable guide for our future work. The statistics which I have quoted here are of a somewhat fragmentary nature, and are gathered from the work of a comparatively small number of men. Perhaps the time is not far distant when we may be the fortunate possessors of the information to which I refer. It should be the aim of all of us to so perfect our methods that we are able to operate upon every patient with frontal sinus suppuration, confident that we will effect a cure with the minimum of disfigurement.

In conclusion, I wish to acknowledge the valuable assistance which I have received from my friend, Mr. John Grieve, in the preparation of a number of my photographs, and to express my thanks to Professor D. J. Cunningham, of the University of Edinburgh, for the opportunity kindly afforded me for dissection upon the cadaver.

A CASE OF ANÆMIA AND ONE OF ACUTE LYMPHOCYTHÆMIA, WITH SPECIAL REFERENCE TO CONDITIONS OF APLASIA OF THE HÆMOPOIETIC TISSUES IN LEUKÆMIA.

By F. Parkes Weber, M.D., F.R.C.P., and Karl Fürth, M.D., M.R.C.P., *Physicians to the German Hospital, London.*

Our first case presents some unusual features, though unfortunately the clinical and pathological data are incomplete.

Case 1.—The patient, Emil W., æt. 34, was a very anæmic and cachetic-looking man, with dyspnœa and fever. He was admitted to the German Hospital on the 12th November morning, and died on the 17th November evening, 1902. Dr. Weber first saw him on the morning before he died. There was a remarkable eruption of flat brown spots or patches, not erythematous, on the trunk, face, and upper extremities. None of them showed any red or purple colour. Some of these patches consisted of dots grouped together in clusters ("corymbose" arrangement). The teeth were in fairly good condition, but there was "fœtor ex ore," and blood was oozing from the gums. Dr. Weber could not detect any sign of organic disease in the heart or lungs. The liver and spleen were not felt, and no enlargement of the lymphatic glands was observed. The urine was of specific gravity 1010, and free from albumin and sugar. The blood was examined on the morning of 17th November. The hæmoglobin value was found to be about 30 per cent. of the normal standard. Under the microscope the white cells seemed to be relatively somewhat in excess. Dr. G. L. Eastes, who kindly examined a film, reported the differential count of white cells as follows:—small lymphocytes, 71·8 per cent.; large lymphocytes, 6·6 per cent. (total lymphocytes, 78·4 per cent.); polymorpho-nuclear leucocytes, 20·6 per cent.; mast cells, 0·8 per cent.; and eosinophiles, 0·2 per cent. He found no poikilocytosis. During the count of 500 white cells four nucleated red cells were seen, one of which was a megaloblast.

In the hospital the patient had cough and vomiting. He scarcely kept anything down. His temperature was irregular, varying between 100° and 104° F. Parts of a tapeworm (*Bothriocephalus latus*) were seen in the fæces.

The history is indefinite. The skin eruption came out about four months before admission. He had been ailing, but had only recently been obliged to keep to his bed. He had had vomiting and diarrhœa, and before coming to the hospital had noticed blood in his motions. About a year ago he had been treated at a London hospital for gastric trouble. He had probably had tapeworm during the last two or three years. His diet had perhaps been insufficient, and he seems to have been unable to get employment. Six years before his death he had had a chancre and gonorrhœa. At that time he was living in Switzerland, but apparently soon afterwards came to England.

At the necropsy red pneumonic consolidation of the central part of the lower lobe of the left lung was found, and there was some recent pleuritic adhesion on the left side. The heart weighed $10\frac{1}{2}$ oz., and was free from valvular disease; there were petechiæ under the epicardium. The aorta was not atheromatous. The liver and spleen appeared natural, except that there was evidence of a little old perihepatitis and perisplenitis, and that both organs were relatively small, weighing only 41 oz. and 4 oz. respectively. The kidneys, as all the organs, were very pale, but otherwise appeared normal. The suprarenal capsules seemed macroscopically and microscopically normal. The mucous membrane of part of the small intestine showed patches of pigmentation, probably due to old hæmorrhages. The lymphatic glands appeared not to be enlarged, unless there was very slight enlargement of the cervical glands. The left humerus was sawn through longitudinally, so that the bone marrow could be examined. It was seen that all the white marrow of the shaft of the bone had undergone a red transformation. Microscopical sections of this red marrow from the diaphysis showed that few fat vesicles remained. The portion examined consisted chiefly of larger cells—myelocytes, including a good sprinkling of eosinophile myelocytes—and smaller cells—erythroblasts and the nuclei of erythroblasts. There were likewise some megaloblasts. Amongst the non-nucleated red blood cells in the sections there was much variation in size to be noted. There were also rather large cells ("macrophages") containing erythrocytes englobed in their protoplasm. The stains employed included Mann's eosin-methyl-blue (long method), Ehrlich's triacid, and hæmatoxylin-eosin.

REMARKS.—The proportion of lymphocytes to polymorphonuclears in the patient's blood was perhaps too great to allow of the case being considered as one of non-leukæmic lymphocytosis, and suggests that it was an example of true lymphocythæmia (lymphocytic leukæmia) without any great excess in the total number of white cells. In undoubted cases of lymphocytic leukæmia, when there is an acute infectious disease superadded, the number of white cells may actually drop to below the normal; of this we had recently an opportunity of satisfying ourselves in a case (which we describe later on) under Dr. Fürth's care at the German Hospital. A condition of relative "aplasia" of hæmopoietic tissues may doubtless be the cause of diminution in the number of cells (cf. Alfred Wolff's recent paper, "Ueber aplastische lymphatische Leukämie und über Stillstand bei Leukämie"[1]). It seems also that certain cases described as "leukanæmia," such as the one described by Weber,[2] in which clinical symptoms found in pernicious anæmia are combined with anatomical changes in the organs characteristic of leukæmia or pseudo-leukæmia, owe their peculiar features to a condition of aplasia of the hæmopoietic tissues, and are in fact cases of leukæmia in which, for some reason or other, the hæmopoietic tissues do not react in the ordinary way. In fact, in the case of leukanæmia, to which we have just alluded, there was at one time an absolute leukopenia. It is possible that the present case may have been a kind of lymphocytic leukæmia modified by previous cachexia (*bothriocephalus*, defective diet, etc.), and by the terminal pneumonia. Yet, on this supposition, the absence of enlargement in the lymphatic glands, spleen, and liver would be very remarkable, and the microscopical appearance of the piece of bone marrow examined would hardly correspond to what one would expect. It is very unfortunate that microscopical sections of the liver and spleen were not likewise prepared, as the presence or absence of any so-called "leukæmic infiltration" might have helped to settle the question. Perhaps, after all, the case was one of chronic "bothriocephalus anæmia," with great lymphocytosis, and with a terminal infection (pneumonia).

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[1] *Berl. klin. Wchnschr.*, January 9, 1905, S. 35.

[2] *Trans. Path. Soc. London*, 1904, vol. lv. p. 288.

Our second case is a typical one of acute lymphocytic leukæmia (acute lymphocythæmia) simulating morbus maculosus Werlhofii, and terminating with a bacterial infection (shown by the pneumonia and throat condition) and with great diminution in the total number of white corpuscles, those remaining in the blood stream at the end of life being practically all of them lymphocytes. The duration of the whole illness seems to have been little more than three weeks.

Case 2.—The patient, Israel S., æt. 23, a Jewish watchmaker from the East End of London, was admitted to the German Hospital under Dr. Fürth on 1st November 1904. He had been ill and more or less confined to his bed for the two previous weeks, suffering from a purpuric eruption, which appeared first on the chest. He had recently spat out a little blood. There was no previous history of any hæmophilic tendency nor of any venereal or other disease, excepting gonorrhœa two years ago. His health had been good, and he had been satisfied with his food both in regard to quality and quantity.

On admissson, the patient presented a remarkable hæmorrhagic eruption, which varied in different regions of his body from minute petechiæ to extensive diffuse or confluent blotch-like ecchymoses. A plaster or poultice which had been applied over the left hypochondriac region had apparently aggravated the eruption locally. On the lower extremities, some of the petechiæ were grouped in "corymbose" clusters. The colour of the spots and blotches differed, chiefly probably according to their duration, from red to a bluish-purple. The hæmorrhagic patches were scarcely raised. There were no lumps due to subcutaneous hæmatomata such as sometimes occur in scurvy. The patient was not emaciated. There was no œdema. His temperature was 100° F. There was some blood about the gums and teeth. There was likewise a hæmorrhagic eruption in the mucous membrane of the mouth, and the fauces were red and swollen. Ophthalmoscopic examination of the eyes showed no optic neuritis or retinal hæmorrhages, but in the right eye the optic disc was completely surrounded by opaque medullated nerve fibres. Of course this is merely a congenital abnormality—similar to the condition which exists normally in some lower animals. The thoracic organs showed at first nothing abnormal. The spleen was considerably increased in size, and there was slight enlargement of the cervical, axillary, cubital, and inguinal lymphatic glands. The liver could not be felt, but percussion showed slight enlargement. The urine was of specific gravity 1020, and free from albumin and sugar. The blood was first examined on 3rd November: red cells, 4,000,000; white cells, 76,000 in the cubic millimetre, most of them large and small lymphocytes, the polymorpho-nuclears were absolutely as well as relatively diminished; no obvious poikilocytosis; a few erythroblasts observed.

The patient's condition became steadily worse, and he gradually lost strength, till he died on 10th November. The fever after 2nd November varied between 100° and 104° F. The pulse during the last days varied between 118 and 164. The urine was free from albumin, excepting on one occasion, when a trace (unaccompanied by casts) was detected; daily quantity about 1900 c.c. There was no Bence-Jones albumosuria. Blood was never observed in the urine or fæces, but he frequently spat or coughed out a little. On one occasion, by auscultation of the heart, a slight double murmur could be made out over the pulmonary area, but this may have been of "cardio-pulmonary" origin only. A few days before his death, the patient suffered from intense pain in swallowing, apparently due to phlegmonous inflammation in the fauces, which, however, had much subsided before he died.

The hæmorrhage into the skin increased. Over some parts of his body and face there were large diffuse or confluent areas of dark purple coloration. At certain places on the neck the skin ultimately became thickened, hard and quite black in colour, with central necrotic ulceration, reminding one of the descriptions of cutaneous anthrax, but doubtless harder and drier than in anthrax cases.

The blood counts showed a steady decrease in the numbers of white cells, until finally a condition of absolute leukopenia was reached. On 4th November 1904, 77,600 white cells were counted in the c.mm. of blood. The differential count of white cells (made on the following day) gave large lymphocytes, 85 per cent.; small lymphocytes, 11 per cent. (total lymphocytes, 96 per cent); polymorpho-nuclears, 4 per cent.; a few coarsely granular eosinophile cells were seen. On 6th November the red cells were 2,150,000, whilst the white cells were 62,400. On 9th November the red cells were 2,000,000 and the white cells only 6000. On the 10th November (the last day of life) the white cells had fallen to 3000 in the cubic millimetre, whilst the red cells remained at 2,000,000. On that day no polymorpho-nuclear leucocytes at all were seen, and of the lymphocytes by far the majority were of the large kind, with basophile granules in the thin layer of cytoplasm surrounding the nucleus. No nucleated red cells were discovered. There was never any considerable poikilocytosis.

Necropsy and microscopical examination.—Microscopic sections of one of the patches of hard black skin on the neck showed much leukæmic or lymphocytic "infiltration" (better "permeation"[1]), together with extravasation of blood. A section of a more ordinary piece of skin from the chest showed commencing "permeation" of the same kind, but of slight degree. The serous membranes like the skin were covered with a hæmorrhagic eruption. The heart weighed 5 oz., instead of the ordinary weight (about 10 oz.). There was no valvular disease or pericarditis. Here we may mention that there was also decided hypoplasia (doubtless congenital) of the abdominal aorta, both in regard to the small diameter and the thinness of the walls. There was some red hepatisation in the upper lobe of the right lung. Microscopic sections showed the presence of polymorpho-nuclear cells in the exudation, and afforded evidence that the consolidation of this portion of the lung was due to pneumonia, and not merely to lymphocytic permeation. There was submucous hæmorrhage about the larynx. The liver was enlarged, weighing 66 oz., and rather pale in colour. Microscopical examination showed lymphocytic permeation, especially of the interacinous spaces. The spleen was large and soft, weighing 25 oz. There was an area of anæmic infarction at one end, and there were a few perisplenitic adhesions. Microscopical examination of a portion showed extensive lymphocytic permeation of the splenic pulp, with relative want of distinction between the pulp and the Malpighian corpuscles. The kidneys appeared normal, and in microscopical sections from one of them no lymphocytic permeation was seen. Nothing special was noted in the other viscera. The remnant of the thymus gland was microscopically examined, and showed calcification in some of the Hassall's corpuscles. A great many retroperitoneal and mesenteric glands, of a red colour from the presence of blood, were noted, and several were examined microscopically. Some were doubtless hæmolymphatic glands with their sinuses more or less full of blood, but in some the blood was not evenly distributed, and was perhaps the result of hæmorrhage. The bones and bone marrow of the extremities could not be examined. The sternal bone marrow was deep red in colour, and films[1] from the marrow of the sternum or ribs showed, besides red blood cells, chiefly large lymphocyte-like cells similar to those in the blood.

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[1] The word "permeation" has the advantage of not implying that the cells have been merely deposited in the tissues from the blood, and that there has been no local growth. *Vide* F. Parkes Weber, "A Case of Acute Leukæmia," *Trans. Path. Soc. London*, 1903, vol. liv. (footnote on page 289).

REMARKS.—In most respects the case is a typical one of acute lymphocytic leukæmia, but even for acute cases it is exceptionally acute, and we doubt whether a more acute one is on record The absolute as well as relative diminution in the number of polymorpho-nuclears at the first blood count (3rd November) was probably of specially ominous importance.

Although a fall in the number of white cells with the onset of infectious diseases is well known to sometimes occur, the drop in the present case was so extreme that a condition of absolute leucopenia (3000 white cells in the c.mm.) was reached. Yet even at the end the diagnosis of leukæmia would have been possible merely by examination of blood films, since the practical absence of polymorpho-nuclear leucocytes and white cells other than lymphocytes could occur in no other disease. Had the case been treated with Röntgen rays like a more chronic case of lymphocytic leukæmia recently at the German Hospital under Dr. Fürth's care,[1] the diminution in the white cells would probably have been regarded as a specific effect of the rays. It should be noted that, though the polymorpho-nuclears practically completely disappeared from the blood stream, they were still present in the exudation in the consolidated part of the lung, as shown by microscopical examination after death.

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[1] It is possible, however, that these films may have consisted rather of blood from the marrow than of the marrow itself.

From the clinical group of cases known as "leukanæmia," to which we have already referred, the present case, even after the drop in the number of white cells, differed by there being no very obvious poikilocytosis.

The hard black necrotic patches of skin which formed on the patient's neck were microscopically found to be a result of so-called "leukæmic infiltration" of the skin combined with hæmorrhage, and were probably to be explained as a kind of leukæmic hæmorrhagic infarction of the skin. Leukæmic "infiltration" and leukæmic "growths" are well known to occur in the skin in leukæmia,[2] but we are not aware that anything of the kind has yet been described in an acute case like the present one. It is interesting to note that by microscopical examination a certain amount of leukæmic infiltration was likewise present in other portions of the skin, namely, in a part which macroscopically only showed the ordinary purpura.

As in Weber's case of leukanæmia,[3] and as in the case of acute lymphocythæmia recently recorded by Dudgeon,[4] there were in the present case many red retro-peritoneal and mesenteric glands, that is to say, lymphatic glands containing much blood. This condition may have been in part due to hæmorrhage into lymphatic glands, but doubtless many of the red glands were true hæmo-lymphatic glands which had been developed out of ordinary lymphatic glands during the progress of the disease.

A striking clinical feature of the present case consisted in the extensive areas of cutaneous ecchymosis of dark purple colour. Such diffuse areas of hæmorrhagic infiltration of the cutis are not met with in most kinds of purpuric eruption, though somewhat similar large blackish ecchymoses were present in the unusual case of purpura described by Parkes Weber.[5]

In a case like the present one, terminating with great hæmopoietic insufficiency, it is worth noting that there was congenital hypoplasia in the circulatory apparatus (aorta and possibly heart) as well as a congenital abnormality in one eye.

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[1] The case described by Dr. E. Schenck, *München. med. Wchnschr.*, November 29, 1904, S. 2135.

[2] For a recent study of cutaneous affections in leukæmia and pseudo-leukæmia, see Nicolau's paper, *Ann. de dermat. et de syph.*, Paris, August and September 1904.

[3] *Trans. Path. Soc. London, loc. cit.*

[4] *Lancet*, London, 1904, vol. ii. p. 1705.

[5] *British Journ. Dermat.*, London, 1900, vol. xii. p. 77.

In conclusion, we have to thank the house physicians, Dr. Schenck and Dr. Blendinger, for their able assistance in the clinical and pathological examination of the cases.

THE DECREASE IN THE BIRTH-RATE.

By Archibald Stodart-Walker.

Despite an evident renaissance of interest in the relationship of the birth-rate to the general well-being of the community, there can be little doubt that this interest is mainly academic and seems incapable of having any practical effect on the social life of the country. And we doubt much if any direct measures would or could effect a change. The national brain is awake, and there may be some slight twinge of the national conscience, but any one, be he psychologist, sociologist, or mere citizen, who is in touch with the tendencies of the time, will fail to find any evidence to prove that the stream of tendency is being diverted into the old channels. The decrease in the birth-rate is a reflex of the necessities of the age and an inevitable result of its habits. It is the triumph of an egoistic idea as opposed to a social ideal. It is a practical demonstration of the suspicious nature of our boasted altruism, upon the stability of which rests the eventual triumph of the country in the international struggle for life.

Not twenty years ago, there existed a common feeling, as strongly expressed on public platforms as in private circles, against early marriages and large families, but as we recall the expressed sentiments of those days, we cannot remember any sympathy with the view, that to interfere with these two conditions was to strike a severe blow at the prosperity of the national life. In those days we faced the apparent terrors of over-population; now, within twenty years, we are seriously threatened with the much more vital problem of under-population. As we have indicated, the whole root of the matter lies in the triumph of the egoistic principle over the altruistic, or, it may be, from an insufficient recognition of the factors upon which society is based. This latter ignorance may be a common condition, but we rather suspect that, even in the face of the knowledge that would dissipate such a condition, there would be little or no practical attempt to meet the serious issues at stake. The happiness of the family circle, of which the citizen is the centre, is of much more importance in his consideration, and certainly a much more personal problem, than the apparently academic question of under-population.

The tendency of the experience of this age is, to teach that early marriages are more likely to be unhappy and to end in failure than those contracted during maturer years, and that a large family is the severest handicap of married life. Herein lies the crux of the difficulty. On the one side of the scale we have the interest of the State in securing its regular supply of citizens, combined with its fear of an increased number of orphans and fatherless children, which is the recognised outcome of late marriages, and, on the other, the personal interests of a particular family.

With regard to the question of early marriages, it is only necessary to remark that, according to Farr,[1] the mean age of both sexes at marriage is 25, the bridegroom being 25⅔ and the bride 24¾. "The age of marriage," he says, "being of prime importance, it may be interesting to show what the effect of any great alteration would be, such, for instance, as Aristotle proposed. For certain reasons, he lays it down that the man should marry at 37: the effect of this would be to reduce the joint mean marriage lifetime to twenty-four years, while the widowers (which in the average quoted above are nine to eleven widows and twenty-seven married couples) would be four; the widows eighteen to twenty-four married couples; so the proportion of widows would be augmented to an extraordinary extent, and orphans, and still more fatherless children, would be multiplied. . . . All late marriages increase the proportional number of orphans," besides decreasing the average number of children. The fathers and mothers of nearly half the children born are under 30 years of age. If all the women at 30 should marry and none before, the births would be reduced to about two-thirds of the present number; and if the marriage age were postponed to 35, the births would fall to one-third of their present number, and the population would rapidly decline. For not only (*a*) would the number of births in each generation diminish, but also (*b*) the interval between the births of successive generations would lengthen, the length of life remaining the same according to the hypothesis. And even if we were to grant that the fertility of early and late marriages were identical, the number of children in the latter is less, because of (*a*) the greater length of the generation, and (*b*) the fact that many who would have been parents have died before reaching the later age of marriage."

We might pursue this matter to considerable length, but we are anxious, in the meantime, to come to the especial point for which this paper is designed, namely, that while the decrease of the population is not marked to any very appreciable extent in the lower classes, it has a marked tendency to diminish in the middle and upper classes, and it is our proposal to discuss the reasons of the anachronism, that where the means of subsistence are greatest and the capacity for education highest, the birth-rate is lowest.

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[1] "Vital Statistics."

We find many causes for this, of which we venture to select the following nine as the most important. In the lower classes we have—(1) greater number of earlier marriages, (2) greater average of physical strength, (3) a bias inspired by theological teaching in favour of marriage and a large family, (4) less love of luxury, (5) keener maternal feeling, (6) ignorance of or distaste for methods to prevent conception or procure abortion, (7) more faithfulness to the monogamous basis of society, (8) more love of family life, and (9) greater necessity and desire to have children who may serve as material and moral supports in old age. Several of these causes are related to and are interdependent one upon another, and some stand to the others in the relations of cause and effect, but the rather arbitrary selection we have made will serve our purpose well of elaborating the essential differences between the classes.

1. In the first place, the *greater number of earlier marriages* in the lower classes, according to the general principle laid down by vital statisticians, will account for the larger number of children per family, and this fact is important, even in view of the tendency in many of the great manufacturing districts to contract marriages below the average and accepted standard of age, with the result of a marked increase in infant mortality. To counterbalance also this increased average of childbirth amongst the lower classes, we have to place on the other side of the scale the tendencies to mortality due to—(1) the inexperience and neglect of young mothers; (2) industrial conditions, *e.g.* employment of women, causing mothers to neglect their maternal duties; (3) improper and insufficient food; (4) deaths from violence, accident, and general debility due to the three former conditions and to general atmospheric and sanitary environments. But in spite of a greater comparative death-rate in the operative classes, the birth-rate being so markedly higher than that of the middle and upper classes, the balance remains markedly superior, in quantity at least, to that of the more privileged sections of the community. Early marriages amongst the working classes are due to several of the causes we have to discuss separately, but those that may especially be mentioned are—(1) the theological bias, (2) the comparative absence of luxury which prevents the working classes from being drawn from the British ideal of the family life, (3) faithfulness to the monogamous basis of society, (4) more love of the family life, and (5) greater necessity of having children to act as material and moral support in old age. The delay in marriage in the more privileged classes becomes more marked every day. The general increase of luxury, the gradual modification of the monogamous basis of society, the decline of theological authority, the gradual decay of the love of family life—all these tend to postpone the official union of man with woman, a fact which is reflected in an exaggerated sense in the utterance

of a cynical peer in a recent comedy, "Men marry because they are tired, women because they are curious."

2. *The higher average of physical strength* is a cause more open to dispute, but it is used as an argument by many, and in the average may be accepted as a reason for the larger number of children in the working classes.

3. *The theological bias.*—There can be no doubt that the simpler, less analytical, religious feelings of the lower classes tend to preserve not only the belief in the religious duty of marriage, but to conserve the old tendencies to monogamy after marriage, and especially the belief in the blessedness of multiplying. However much criticism may have altered, for the more privileged classes, the conceptions of theological teaching, there can be no doubt that, for the mass, the Mosaic theology and sociology still remain the bed-rock of the family life of the country. The injunction to be fruitful and multiply, and the idea that to multiply richly is a special blessing of Providence, have still great weight, and to be blessed with many children is regarded as raising man and woman in the especial favour of God. The most casual acquaintance with the working classes will impress this fact upon the sociologist, and it must be taken seriously into account. In the upper and middle classes it counts but slightly; with them the association of a large family with a special blessing of God is not a matter of serious consideration.

4. *Less love of or opportunity for luxury.*—This is possibly the most important consideration we have to deal with. To many it supplies the whole explanation of the difference between the two classes. It is not to be denied that the lower classes have indirectly been affected by the general spread of luxurious living, but the contrast between the two more favoured classes and the third is striking and complete. Let us view the matter first from the man's point of view. In his case it causes rather a distaste for early marriage than a dislike of a large family, although the latter is not absent from his consideration as being a check to his pursuit of the fleshpots. His distaste for early marriage springs from several causes—(1) The means at his disposal to make the life of a bachelor much more attractive to his egoistic sense than the married state affords (the great increase of the number of clubs has emphasised the temptation to temporary celibacy). (2) His knowledge of the fact that, in the majority of cases, few women are prepared to sacrifice the status and comfort of their home life for the lesser comforts of the initial stages of married life. These two conditions are of common observation, and by some serve to explain the whole matter. But, as sociologists, we must not be afraid to face the third condition, which is (3) the uncontrolled polygamous instinct of man. "Man is by nature, and generally by habit," says a recent writer, "a polygamist." The first condition of affairs cannot be denied, the study of biology

is sufficient confirmation, and there can be no doubt, if we face matters fearlessly, that we must own that the habits of the majority of young men, at least, are polygamous, despite all the emphasis that is brought to bear upon the fact that the basis of our civilisation is monogamy. Now, of the man whose habits are polygamous, there are two types. There is the man who is quite capable of being strictly monogamous after marriage, and the man who doubts his capability. In the first case, where this polygamous cause acts in preventing marriage, it springs from the natural distaste of the monogamous state, and in the second from a fear of the reassertion of the polygamous habit. The latter condition we do not believe to be common, as the honourable feeling thus expressed has in certain classes less force, owing to the amount of polygamy *in camera* which exists in these classes during the married state.

The woman's point of view, in considering this aspect of the question—that is, the aspect of deferred matrimony—has been sufficiently indicated in considering the question from the man's standpoint. So much for the question of luxury and early marriages.

Let us take the even more important consideration, that is, the pursuit of luxury in its direct influence on the birth-rate. There was an excellent illustration of the contest between duty and pleasure, which of course is involved in this question, in the pages of *Punch*, a few years ago, where a master explains to his coachman that they must part, for he feared that looking after his (the master's) horses was interfering with his (the coachman's) drinking! The point of view so facetiously expressed in this story is the point of view of ninety per cent.—and we give the percentage advisedly—of society women. Maternity handicaps the pursuit of pleasure, stands in the way of the full enjoyment of the social game—and so does the existence of a large family. It is difficult to serve both mammon and the nursery. The honours of maternity count as little in the social whirlpool. We quite realise how, in our modern environment, a woman, with all her opportunities not only for pleasure, but also for the active interests of a less selfish life, hesitates in sacrificing the best years of her life to the birth and training of children, and it is this consideration that renders it improbable that any marked change for the better will take place. It is only necessary, however, to remind society of this eternal sacrifice of the altruistic idea on the altar of selfishness.

We are not dealing here so much with the rights and wrongs of the question, as with the facts, or we might be prepared to offer an answer to the contention which ninety-nine women out of a hundred would make to this charge, namely, that it is made by a man, who has not to bear the brunt of the handicap of child-rearing. The only suggestion we would make is, that it is impossible to get over the laws of nature, and that the risks of a man's life and the handicaps of a woman's balance each other more or less evenly, and if the balance be not efficient, we must again refer the matter to the wise discretion of natural law.

5. *Keener maternal feeling amongst the lower classes.*—In using this cause, we do not refer to the feeling of mother for child, for it is our experience that nowhere does that find greater and more passionate expression than amongst those very classes in which the pursuit of pleasure is keenest. We refer to the keener desire for maternity which is found in the woman of the lower orders. This question, like the question of physical strength, is, however, open to discussion, and is not so indisputable as the other differences between the classes which have come into our consideration.

6. *Ignorance of or distaste for methods of preventing conception or procuring abortion.*—It is useless, in fact it is criminal, for the practical student of social vicissitudes, as well as for the ordinary citizen, to shut his eyes to the grave problems which are opened by the enormously increased tendency to use artificial means to prevent child-birth amongst the upper and professional classes. In a suggestive leader, *The British Medical Journal*, London, of 29th June, says, "The fact cannot be disguised that the chief means by which the great lowering of the birth-rate in most civilised countries has been brought about has been by the dissemination of instruction as to the means of artificially preventing conception. The medical profession, as a whole, has set its face against such practices, which are unnatural and degrading in their mental effect, etc. etc." Of course the majority of these attempts spring from a desire to escape the handicaps of maternity in the social race for pleasure. In the lower classes and amongst Roman Catholics the condition of affairs is practically absent, as a result either of religious instinct, love of children, or absence of the means of or desire for great luxurious living, or from ignorance.

7. *More faithfulness to the monogamous basis of society in the lower classes after marriage.*—It will easily be seen how this acts directly and indirectly on the question of birth-rate.

8 and 9. *Greater love of family life, and greater necessity and desire to have children to act as material and moral supports in old age.*—Luxury has an inevitable tendency to kill or modify family life. In certain sections of London society it has almost ceased to exist. In all large social centres in which the stream of pleasure runs fast, it is at a discount. The comparative absence of luxury amongst the working classes accounts for the persistency of the family ideal. As for the ninth cause, it will easily be seen how, in the precarious hand-to-mouth living of the lower classes, the existence of a large family eventually acts as the best and most satisfactory system of life and comfort insurance.

We have thus, in a very cursory way, viewed the essential causes of the difference between the aspect of the upper and middle and the lower classes towards the question of child-birth and the birth-rate. The inferences and lessons to be deducted from such facts must be left to the consideration of sociologists of all schools. The effect upon the sum-total of public opinion must be marked. Whether for its good or for its evil, social life is being gradually starved of the hereditary blood tendencies and traditions, not only of what radicals are fond of calling "a decayed and decaying aristocracy," but also of the upper middle class, of that very stratum of society which is vaunted as the backbone of the national life. And in addition to the question of quality, we must add the general consideration of quantity, which is becoming as serious in this country as in France, and which must surely sap the national strength, thin the rich currents of the country's blood much more permanently than the causes so vividly described by Malthus.

THE THERAPEUTIC VALUE OF RELAXING CLIMATES.

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The attitude of the vast majority of the members of the profession towards climatic treatment is one of benevolent indifference. That this should be the case is not altogether surprising. In the schools, nothing, absolutely nothing, is taught on the subject, and the opportunities for acquiring a working knowledge after the period of tutelage is over are necessarily reserved for the few. Every one is rightly cautious in recommending an agent of which he knows little, so the practice of climatotherapy and the principles which underlie it, continue, much to the disadvantage of the public, to languish in the cold shades of unmerited neglect.

Change of air, it is true, continues to be a favourite prescription, especially with those who every now and again feel the urgent necessity for relief from the attentions of too persistent patients. When the change is from the polluted air of large towns to the pure atmosphere of sea or moorland, the prescription is, from that point of view, altogether to the good. The pity is that, granted the desirability of pure air, more attention should not be paid to the other climatic factors, such as moisture, sunshine, and exposure, which present such wide divergences in many places, all of which can claim an equality of atmospheric purity; factors which exercise so vast an influence upon metabolism and other vital processes as to entitle them to a determining voice in the selection of the locality at which the pure air is to be sought. In present circumstances, if anything beyond atmospheric purity is considered at all, it is that combination of conditions to which the adjective "bracing" is by general consent applied. "Some place in a good bracing climate" is probably the very commonest of all climatic prescriptions. That it is liable to be one of the very worst, it is the purpose of this paper to show.

A bracing climate has great attractions for people who are in moderately good health. It stimulates the vital forces, improving the appetite, and increasing the capacity for enjoyment both physical and mental. Its effects have been compared to those of champagne—without the subsequent headache. But climatic champagne is no more to be prescribed indiscriminately than is its vinous prototype. If the subjective effects of the two are equally agreeable under suitable circumstances, their objective results are equally disastrous under those which are unsuitable.

The combination of meteorological factors which constitutes a bracing climate may be stated broadly as consisting of high altitude, dryness and rarefaction of the atmosphere, free exposure to sun and wind, and moderate rainfall. The great determining element is the dryness, or, more correctly, the humidity. If the humidity is low, there will be great and sudden variations of temperature; if the humidity is high, the variations are slight and gradual, but the climate is no longer bracing. It is common, absurdly common, to find in the text-books of general medicine the recommendation that a patient suffering from the complaint under consideration—it is generally rheumatoid arthritis—should be sent to a "dry, equable climate." It is no more possible for a climate to be dry and at the same time equable, than it is for a solution to be acid and at the same time alkaline. The moisture in the air plays the part of a "compress" in preventing the rapid radiation of heat from the earth, and, in the absence of the compress, there is nothing to check the radiation. A bracing climate, then, is characterised by extremes, and its physiological effect is one of stimulation. But we know that what is a stimulant in normal states is very apt to become an irritant in abnormal states, and this is as true of climatic as it is of other therapeutic measures.

A relaxing climate has few, if any, attractions for robust people. Metabolism is decreased, appetite becomes impaired, the spirits depressed, and the frame lethargic. Even moderate indulgence in stimulating foods and drinks, such as meat foods and alcohol, is liable to be followed by gastric and other disturbances. Instead of climatic champagne, the suggestion here is rather that of a climatic nepenthe, which deprives the mind of its elasticity and the body of its energy. The meteorological factors which combine to produce a typical example of such a climate are, moderate, if any, elevation, moderate exposure to wind, full exposure to sun, and a high humidity with its consequent equability of temperature. Such a climate, despite its disagreeable effects upon the healthy, is possessed of a very much wider therapeutic range than that whose subjective effects are agreeable. For it is very few real invalids of the chronic type who bear stimulation well. Invalids of the subacute type, that is, convalescents from acute disease, may bear it well, though some do not; but the sufferers from chronic pulmonary troubles, from chronic renal troubles, from chronic heart disease, and chronic nervous disease, all demand a sedative rather than a stimulating régime.

The question of the climatic management of pulmonary diseases is, in the minds of so many, synonymous with the climatic treatment of phthisis, that it is difficult to persuade people that climate has anything whatever to say to the treatment of any other form of disorder of the respiratory organs. The reason for this is doubtless to be sought in the laudable but fruitless groping after an effective method of treatment which obtained in the days before the introduction of the open-air system. It is now recognised that there is no type of climate which is, *per se*, suitable to pulmonary tuberculosis; that each patient is a case to be decided upon according to the stage and type of the complaint, and the temperamental and other characteristics of the individual. It is futile to attempt to treat any disease by any method without careful regard to the individual who is the subject of the disease; but of all therapeutic futilities the most disastrous is the attempt to treat phthisis by climatic methods without individual considerations. Beyond this, it is only necessary to say that when such individual considerations are weighed, it is generally found that sedative measures are indicated more often than stimulating, and that, consequently, the decision is more often for a relaxing than for a bracing climate.

For our present purpose a better disease than phthisis, because of the greater uniformity in its prevailing type, is emphysema. In this condition the capillary area in the lungs is greatly reduced, the right heart is consequently embarrassed, and breathlessness is a pronounced symptom. The difficulty of adequately oxygenating the blood causes such patients to suffer acutely from cold, and their general condition prevents them from adapting themselves readily to changes of temperature. The effects of a bracing climate could therefore only be to intensify their miseries. The rarefaction of the atmosphere reduces still further the oxygen available for blood aeration, and still further impedes the reactive power to external variations, which are, nevertheless, provided in increased measure. The cough and breathlessness become worse, and the embarrassment of the heart more pronounced. It is like the proverbial flogging of the tired horse.

In a relaxing climate, on the other hand, such a case enjoys very considerable subjective amelioration. The moisture in the atmosphere acts as a direct sedative on the respiratory passages, while at the same time providing against the frequent and wide variations of temperature which prove so trying. Such a climate in a locality which is suitably warm, say on the south-west coast of England, holds a prospect of relief and comfort for emphysematous patients of which physicians might profitably take more frequent advantage.

In chronic nephritis, whether tubal or interstitial, the excretory power of the kidneys is impaired, and part of their work is therefore thrown on the skin and lungs. Under such conditions it is obviously bad policy to increase the amount of work which these organs are called upon to perform. If the amount of such work is kept at a moderate level, they may be able to cope with it; if it is increased, they are liable to break down under the burden. Inasmuch as a bracing climate heightens and accelerates the metabolic processes, it must of necessity increase the material of which the excretory organs have to dispose. The kidneys being crippled, some share of this increase is thrown on the skin. If the excretory function of the skin is to maintain a high degree of activity, it is essential that the organ should be kept at a uniform temperature; for contraction interferes with elimination. . But this, in a bracing climate, is impossible; the variations in temperature effectually prevent it; so that the bracing conditions, while increasing the waste material, are at the same time engaged in shutting the doors to its exit. It is a process of "filling up the cup," in which the bitterness is with the patient.

Than those of chronic nephritis, there is no class of case in which more satisfaction is to be derived from the advice of a suitable climate. The great essentials are warmth and equability: the former is partly a matter of distance from the equator and partly a matter of exposure; the latter is merely a question of humidity. Without a high degree of humidity, equability is impossible. For those who are prepared to undertake the necessary journey, Madeira and the Canary Isles offer great advantages; but there are many places both in France and the British Isles where wholly suitable conditions are available. Of the two forms of chronic nephritis, that which derives the most conspicuous benefit from climatic treatment is the interstitial. Bracing conditions, by constricting the cutaneous vessels, tend to raise the blood pressure, while relaxing conditions reduce it. In a bracing climate such cases are therefore peculiarly liable to cardiac troubles and cerebral hæmorrhage, whereas in a relaxing climate the conditions favour the indefinite postponement of these and other dreaded complications.

And it is for such reasons that bracing climates are definitely contra-indicated in all chronic diseases of the heart. The increased functioning of the whole organism, the heightened blood pressure, and the mental exhilaration inviting to physical indiscretions, which are inevitable in such circumstances, are all of them elements of grave danger which the physician does well to bear in mind where he has a flabby or a structurally damaged heart to deal with. An infinity of harm is frequently done to people with simple dilatation by sending them to a bracing climate. That this is done, is sometimes due to the fact that such a climate is recommended without any preliminary examination of the cardiac area: more often, it is due to the faulty methods adopted in conducting such an examination. The percussion of the præcordial dulness is generally undertaken with the apparent view of discovering how much of the heart is uncovered by lung. Certainly the sledge-hammer style of percussion which seems fashionable nowadays is quite incapable of affording any more helpful information. What the physician wants to know, however, is not the superficial area of dulness, but the actual size of the heart, more especially the actual size of the easily dilated right heart. To use a heavy stroke for this purpose is to defeat the end in view. If the actual size of the heart is to be mapped out with any approach to accuracy, then it is essential that a light stroke should be used, the lightest in fact which will produce a note at all. If this were more systematically practised, fewer patients with dilated hearts would be sent to their destruction in bracing climates.

In the treatment of the degenerative processes which affect the central nervous system, bracing climates have no place. The idea which reconciles the uneducated portion of the community to restricted diet in acute affections, namely, that ordinary food "feeds the disease," may be unscientific, but it is satisfying. If we apply the same idea to the question in hand, we may say that in nervous degenerations bracing climates "brace the degenerative process," an explanation which has the merit of being both correct and intelligible. Such degenerations, so far as the means now at our disposal are concerned, are incurable; the most that we can do is, while relieving the urgent symptoms, to impede the morbid process, and haply to check it. The vital forces must be husbanded, for every exhausted point is immediately occupied by the enemy. Such being the case, the dead level of the relaxing climate is the only safe medium. In such a climate, stimulation can be applied where and when it is required; whereas in the bracing climate the stimulation is general and ever-present, and the task of the physician is the impossible one of soothing points of undue excitability without depressing the whole. The spinal degenerations, such as tabes, disseminated sclerosis, and primary lateral sclerosis, are very favourably influenced by a warm relaxing climate: whereas in the far more agreeable bracing conditions such cases progress rapidly to their inevitable issue. In the case of so-called functional nervous disease, the problem is not always so simple. No one, of course, who recalled the aphorism that "epileptics bear tonics badly" would seriously think of advising an epileptic to a bracing climate—for his epilepsy. Unfortunately, however, epileptics are, like other folk, liable to suffer from conditions in which bracing climates are indicated, and difficulties of selection then multiply themselves. Where neurasthenia and hysteria are concerned, the choice is determined largely by temperamental considerations and the circumstances of any suggested locality. It would, for example, scarcely be wise to recommend a mentally depressed person to a lonely quiet spot, however bracing the climate; nor, however relaxing the climate, to send an excitable person to a town "full of life."

Climatic treatment is commonly made to go hand in hand with other therapeutic aids, such, for example, as baths and waters; and in selecting a locality it is always well to bear in mind the service which such aids are capable of rendering. It is only necessary to mention the great assistance to be derived from massage and sudorific baths in the treatment of renal disease, and the advantages of effervescing baths and exercises in chronic heart disease, to point the moral of the desirability, when selecting a climatic station, to allow the existence of such adjuncts a determining voice in the ultimate decision.

We have in these islands admirable examples both of bracing and relaxing climates, and it would be to the advantage of the public and to the credit of the profession if the latter would make a more discriminating use of them. The bracing climates, it is true, are appreciated,—not infrequently they are over-appreciated,—in the sense that merits are often assigned to them which they do not and cannot possess. The relaxing climates, on the other hand, are unduly neglected: their unattractive exteriors have obscured their inner worth, and the time has seemed ripe for a plea in favour of a truer and fuller estimate of their therapeutic powers.

ON ADDISON'S DISEASE, WITH TWO CASES; AND ALSO A CASE WHICH PRESENTED THE SYMPTOMS OF DISEASE OF THE SUPRARENAL CAPSULES.

By A. F. R. Conder, M.D.

(Plate XVI.)

Since the publication by Thomas Addison, in 1855, of his monograph on "The Constitutional and Local Effects of Disease of the Suprarenal Capsules" (1), the condition now known as Addison's disease has attracted much attention, and the smallest addition to the literature on the subject is of interest, especially if in any carefully recorded case the nature of the pathological lesion found post-mortem is not such as might have been expected from the clinical features observed during the patient's life.

Addison himself gives in his monograph a complete clinical picture of this condition, when he says that the "leading and characteristic features" usually presented are "anæmia, general languor and debility, remarkable feebleness of the heart's action, irritability of the stomach, and a peculiar change of colour in the skin, occurring in connection with a diseased condition of the 'suprarenal capsules,'" and in the majority of recorded cases these symptoms have been present in a greater or lesser degree: and in combination, without the presence of any other obvious causative lesion, form sufficient grounds on which to base a diagnosis of this condition.

The suprarenal glands are normally two in number. They are supplied with blood by branches from the aorta and the phrenic and renal arteries; the right suprarenal vein returns its blood into the inferior vena cava, and the left into the left renal vein: the lymphatics communicate with the lumbar glands, and the nervous supply is from the solar and renal plexuses, and also through the phrenic and pneumogastric nerves.

Structurally the suprarenal capsules are divided into a cortex of a yellowish-brown colour, which is glandular in structure, and is divided into three zones (the zona reticularis nearest the medulla, the zona fasciculata, and the zona glomerulosa which is most external), and a medullary portion, which is deep chocolate-brown in colour, and contains very numerous nerve cells, which are almost absent in the cortex. Each is surrounded by a fibrous capsule, and weighs about a drachm. These glands are ductless.

The physiology of the suprarenal capsules has given rise to much discussion, and before the publication of Addison's observations they were considered as having no special function, a view which was supported by the experimental evidence of Harley (2) and others, who stated that in some animals these glands could be removed without producing any ill effects: Tizzoni (3), who was also of opinion that the capsules were not necessary to life, attributed the death of animals from which they had been removed to the injury of some other structure.

More recently, however, Olliver and Schäfer (4) have fully investigated the functions of these bodies, and they state that their removal is sooner or later invariably followed by death, which is preceded by great muscular prostration. These observers also found that they could extract from the medulla of the gland, but not from the cortex, a substance which, when injected into the general circulation of an animal, caused an enormous rise of blood pressure, due to the constriction of the arterioles throughout the body, and also to its direct effect on the heart. This action they found to be equally well marked when the vagi were cut and the spinal cord destroyed, showing that it was a direct action upon the muscle tissue itself; they also found that in a nerve muscle preparation treated with these extracts, and stimulated by a single induction shock, the contraction was greatly prolonged: and from these results they concluded that the suprarenal glands, though ductless, are true secreting glands, and that the matter which they form is a tonic by direct action to the muscular tissue in general and to the heart and arterial system in particular, and this matter they found to be absent in the capsules of patients suffering from Addison's disease.

With regard to the etiology of this disease there is little to be said; it is more common in males than in females, in the ratio of about three to one. Greenhow (^{5}) collected 183 cases, of which 119 were males and 64 females; Wilks (^{6}) had 25 cases, 19 being in males; and Osler (^{7}) 12, of which 9 were males.

The age at which the symptoms usually show themselves is from twenty to fifty years, a fact which Greenhow emphasised as being the most energetic period of life, but cases have occurred during the first decade of existence, and Osler mentions a congenital case in which the organs were found cystic; cases sometimes occur after fifty, and Greenhow had a case in a female whose age was said to be sixty-nine.

The disease is more common in the working classes. Sometimes there is a family history of tuberculosis or malignant disease, or the patient may show signs of tuberculous disease of other organs. The symptoms may follow some injury to the back such as a strain, or a blow upon the abdomen, but in the great majority of cases the condition is insidious in its onset, and can be referred to no particular cause.

The pathology of Addison's disease has been a matter of much dispute, and still presents many difficulties, which have not been lessened by the number of spurious cases which have been published under this name.

Addison, in his monograph, collected eleven cases, in which the suprarenal lesion was in five definitely tuberculous; in four, including his case caused by the blocking of the left suprarenal vein by a malignant nodule, the change was malignant; in one the capsules are described as being in a fibro-fatty condition, with considerable atrophy; while the remaining one is indefinite, though probably tuberculous. Greenhow (^{8}), however, considered that there was only one change in the suprarenal capsules which was the cause of true Addison's disease, and that this change, though in different stages, was identical in them all, an opinion in which he was supported by Wilks (^{9}), and later by Fagge (^{10}); the former, however, considered that the lesion was of a simple inflammatory nature, whereas Greenhow favoured its tuberculous origin, without definitely committing himself in either direction; and these authorities considered that the cases recorded by Addison himself, and others, in which the lesion was other than the fibro-caseous change, were not to be regarded as examples of Addison's disease, but as cases which merely bore a superficial resemblance to this condition, and in which the symptoms were not pathognomonic. Greenhow also observed that in some cases the suprarenal capsules might be entirely destroyed by malignant growths without any of the symptoms of Addison's disease being produced, and this fact led him to search for some agent, other than the implication of these glands, which might be regarded as the main factor in producing the symptoms characteristic of the condition. He found that in many cases the nerves of the solar and suprarenal plexuses showed under the microscope marked evidence of increase in their fibrous coverings, and that the nerve fibres themselves, though usually healthy, sometimes also showed inflammatory changes. Habershon (11) and Tuckwell (12) had found the cells of the solar plexus and semilunar ganglia in a state of fatty degeneration, and showing marked pigmentation in cases where the capsular lesion was typically fibro-caseous; and Greenhow states that Addison (13) himself drew attention to the fact that "Mr. Quekett had found, on microscopical examination of a portion of the semilunar ganglion and solar plexus in one of his cases, that they had undergone some form of fatty degeneration." This, however, was a misconception on Greenhow's part, as the specimens referred to are from a case of pernicious anæmia, of which Addison gives a beautifully concise description in the early part of his monograph on "Diseases of the Suprarenal Capsules." These observations, however, led him to conclude that Addison's disease was in reality caused by implication of the abdominal sympathetic nerves and ganglia, secondary to the lesion in the glands themselves, and that the symptoms were due at first to the irritation and later to the consequent atrophy of these nervous structures (14); and he strengthened this theory by the fact that both glands might be entirely destroyed by malignant disease without causing symptoms of Addison's disease, which appeared to prove that it did not depend upon abolition of their function, and furthermore that symptoms might be present though only one gland was affected (a statement which was doubted by Fagge).

More recently, however, Hale White (15) has shown that fatty and pigmentary deposits occur in the cells of the abdominal and sympathetic ganglia in many conditions, and are practically normal in advanced age, and hence the theory of nervous causation of Addison's disease gains no support from the occurrence of these changes; further, Fowler (16) and others have recorded cases in which the abdominal sympathetic has been involved in masses of lymphadenomatous tissue or exposed to continued irritation from spinal disease without causing any of the classic symptoms, excepting, perhaps, a little pigmentation, and this theory of nervous implication will not account for the cases in which the lesion was a simple atrophy of the glands.

Rolleston (17) has shown that accessory suprarenals are by no means rare, and that they may hypertrophy and carry on the functions of the main gland, which offers an explanation of the cases in which the glands were destroyed and symptoms were wanting; and the patient may have died before the more prominent symptoms set in. In cases where only one gland is found affected, Rolleston thinks that the vessels, nerves, and lymphatics are probably implicated in inflammatory masses, or else that the single remaining gland is unable to cope with the increased strain thrown upon it.

These facts seem enough to prove that implication of the solar plexus, semilunar ganglia and nerves, is not in itself enough to cause Addison's disease, and the researches of Olliver and Schäfer, before mentioned, support very strongly the theory that the condition is due to suppression of function of the suprarenal capsules. Cases in which the glands have been found healthy, but the sympathetic involved in dense masses of old-standing adhesions, are also explained by Rolleston by the implication of the pedicle of the gland containing its vessels and nerves, though if this be so it is difficult to understand why the capsules have not atrophied, unless a collateral circulation has been established, in which case their function would probably not be in abeyance.

Most recent authorities, however, agree that the symptoms characterising Addison's disease may be produced by any destructive lesion of the suprarenal glands, and Rolleston ([18]) gives the following classification of these lesions in order of relative frequency :—

(1) Fibro-caseous tuberculosis; (2) simple atrophy ; (3) chronic interstitial inflammation causing atrophy; (4) malignant disease; (5) hæmorrhage into or around the capsules; (6) pressure of inflammation involving the semilunar ganglia.

The symptoms from which Addison concluded that disease of the suprarenal capsules might be diagnosed are, as stated in his monograph—(1) anæmia; (2) general languor and debility (or asthenia); (3) feebleness of the heart's action; (4) irritability of the stomach; (5) pigmentation of the skin; and he pointed out that the disease was not to be diagnosed upon any one symptom, but rather from the combination of them all.

Anæmia, the first of Addison's symptoms, is one upon which he laid much stress; he alludes to the condition while speaking of the discoloration of the skin as "this form of anæmia"; he does not, however, appear to have enumerated the red corpuscles or leucocytes in any of his cases, though this had been done by Vierordt in 1852, neither did he estimate the hæmoglobin; but he states that the blood of one patient showed a "considerable excess of white corpuscles." Greenhow, on the other hand, did not find the blood abnormal in his series of cases, except in one, who had lost blood from a wound, in whom the red corpuscles were deficient, and many "small, highly refractive nuclei" were found, possibly hæmoconia, which Muller ([19]) noted to be increased in one case of Addison's disease. Anæmia, however, though frequently present, is not as a rule profound; it may, however, exist in a very advanced degree, so much so, indeed, that Osler records a case in which the diagnosis was not at first clear between Addison's disease and pernicious anæmia (20). Da Costa (21) states that in advanced cases erythrocyte counts of between 2 and 3 millions may be seen, while the hæmoglobin percentage falls between 20 and 40; in these cases poikilocytes and microcytes are numerous, and small numbers of normoblasts occur, but large forms are not met with; high erythrocyte counts, such as one of 7,700,000 per c.mm. recorded by Cabot (22), are attributable to blood inspissation from continued vomiting or diarrhœa.

The leucocytes are usually normal or decreased in number, sometimes even to extreme leucopenia; a relative lymphocytosis is usual according to Da Costa, and in some instances a few myelocytes and basophil leucocytes are to be found. The blood condition is therefore usually little below normal, but all degrees of secondary anæmia may occur, depending probably upon the nature of the primary lesion.

Asthenia, the second of Addison's cardinal symptoms, is extremely characteristic of this condition. The onset of this languor may be very gradual, but it reaches a profound degree, in uncomplicated cases, before death.

In some cases, however, this debility may only have been noticed a few weeks or even a few days (23) before the fatal event, and though frequently the first symptom to appear, it may follow the pigmentation of the skin by some months or even by as much as five years, as was the case in a patient seen by Drs. Cornil and Vast (24).

The asthenia may be accompanied by little wasting of the muscles, but emaciation is slight as a rule, if present at all, and not infrequently the subcutaneous and intra-abdominal fat is even more abundant than usual; there seems to be a mental and physical inability for any sustained effort, and the patient frequently lies for some days as if paralysed, and finally dies of exhaustion, and this debility might well be produced by the absence of a normal muscular stimulant such as Schäfer and Olliver have shown to exist in the medulla of the suprarenal glands.

Feebleness of the heart's action, the third symptom, is always marked: the heart is not usually much enlarged, and is frequently smaller than normal, and this weakness is shown by the small and feeble pulse, which increases greatly in rate upon the slightest exertion or excitement. The volume of the pulse is, as a rule, very small, but it may be large and soft but extremely compressible, resembling that seen in some cases of pernicious anæmia.

The depressed condition of the circulation also shows itself by the frequent presence of faintness and palpitation, and by the syncope which so often proves fatal. This cardiac condition was supposed by Greenhow to be due to the irritation of the vagus (25), but is probably in great measure caused by absence of the suprarenal secretion and consequent want of tone in the heart and arteries, as in the other muscles of the body; a faint blowing systolic murmur may often be heard over the base and great vessels; and the heart is commonly found post-mortem to be in a condition of brown atrophy, with some fatty or interstitial change. Effusion into the pericardial sac has been frequently noted.

Irritability of the stomach, the fourth cardinal symptom, may be extremely prominent, and Addison has recorded one case in which the vomiting and pain gave rise to a suspicion that some "acrid poison" might have been administered. The nausea and vomiting are usually late in their onset during the course of the disease, but they may occur spasmodically for many months before the death of the patient; the vomited matters have no distinctive features, and the tongue is usually clean. The bowels are most frequently constipated, but this condition may alternate with intractable diarrhœa, which may in itself cause death.

The post-mortem appearances of the stomach are not characteristic, except that an increase of lymphoid tissue, giving a lamellated appearance to the organ, was noted by Addison (26), and has since been confirmed by other observers; and in this connection it is of interest that the spleen has been frequently described as enlarged. Minute hæmorrhages may often be seen in the gastric mucosa, and sometimes small ulcers formed by the breaking down of the summit of the lymphoid follicles; possibly the alimentary disturbance may be due to an atonic condition of the muscular structure of the stomach and bowel, and in some part also to nervous irritation when this factor is also present.

Pigmentation of the skin, the fifth and last classic symptom, is, when present, most striking and peculiar.

Addison himself says that "the great distinctive mark of this form of anæmia is the singular dingy or dark discoloration of the skin," and he infers that it is usually present, though it may be to only a slight extent, when the pathological change in the suprarenal capsules is in an early stage.

The typical discoloration is of an olive brown or bronze tint, sometimes approaching to greenness; it affects the whole of the body, but is not of a uniform depth of colour; it is deepest in tint upon the face, neck, and hands, and upon the normally more deeply pigmented parts—the nipples, areolæ, genitals, axillæ, and navel; those parts of the skin also which are subjected to continued pressure or friction, as by garters or petticoat strings (27), are deeply pigmented, a fact which was well shown in a case recorded by Nicholson (28), where a baker's boy suffering from this disease exhibited broad dark bands from the friction of his braces and the basket which he habitually carried strapped to his back. The extensor aspects of the limbs are usually of a deeper colour, being more subject to irritation, and the shoulders and sacral region are often very deeply discoloured.

There may be scattered over the body numerous small intensely deeply coloured moles, and these were considered by Greenhow ([29]) to be of much diagnostic importance, and are, when present, of great assistance in differentiating the pigmentation of this disease from that caused by other agencies in which they do not, as a rule, occur. The discoloration may be blotchy and not general, and this is especially so in lesions of the capsules other than the fibro-caseous tuberculous change, and it may be interspersed with patches of sharply defined leucoderma ([30]); the superficial scars left by blisters show increased depth of tone, but in the typical discoloration of the skin the darker and lighter areas merge gradually into each other, and are not clearly circumscribed, though at first sight this may appear to be the case. In well-marked cases the appearance of the skin resembles that of a "mulatto or one of the darker races of mankind," and, a point of much importance, the exposed parts of the skin are those in which the discoloration is most marked. The palms of the hands, the soles of the feet, and the matrices of the nails, are relatively free from pigment.

The pigmentary change is not, however, limited to the skin, but is often in addition present in the mucous membrane of the mouth, where slaty or brownish patches occur on the gums, lips, tongue, and buccal mucosa; these areas on the tongue and lining of the mouth usually correspond to the sites where pressure is made by the teeth. They may, however, occur upon the hard palate, where this pressure could hardly be operative, and discoloured stains have also been recorded upon the conjunctivæ and vaginal mucous membrane. This change closely resembles that frequently seen in Lascars and negroes, and is considered by some authorities to be of more value than the cutaneous pigmentation as a diagnostic sign. Schultze ([31]), however, has observed similar mucous pigmentation in chronic stomach troubles, and Thibierge ([32]) has recorded pigmentation of the buccal mucosa and glans penis in cases of pediculosis vestimentorum. This localised deposit of pigment was not apparently noticed by Addison, as he makes no mention of it in any of his cases. Darkened areas have been noted upon the serous membrane, and Fagge ([33]) quotes a case of Carrington's in which the pia of the bulb was more deeply pigmented than normal. Addison also found in one of his cases numerous small deposits of black pigment beneath the peritoneum of the gut ([34]).

The pigmentation, though subject like the other symptoms to acute exacerbations and remission, is, like them, progressive. It may be the first symptom noticed by the patient, and may precede the asthenia by many months or years. On the other hand, it may be late in its onset, and many well-marked cases are recorded in which pigmentation was almost or completely absent, and in these cases it is probable that the patient died before the pigment had time to appear.

The cause of the pigmentation is not at present known. Greenhow regarded it as due to "reflex irritation through the cerebro-spinal nervous system," and Wilks also took this view. It has also been attributed to vasomotor nerve irritation, trophic disturbance, some peculiar change in the blood, and want of excretion of some toxic material by the suprarenal glands, though the latter theory is not supported by the fact that some cases of Addison's disease improve under treatment with extracts from these capsules.

In this relation it is interesting to find that Tizzoni noted pigmentation of the lips, tongue, and oral mucosa in rabbits in which the capsules had been crushed *in situ*, and that these animals finally died with symptoms resembling those of Addison's disease in man ([35]).

Pigmentation of the peritoneum may be caused by former peritonitis, and is of little value, and Greenhow thought that in non-tuberculous cases the cutaneous discoloration was not characteristic, but was such as is sometimes seen in other morbid states. Fagge was also of this opinion, and called attention to the bronzing of the skin in chronic phthisis, pediculosis, malaria, and other conditions, and mentions a case of leucoderma which was diagnosed as one of bronzed skin; the change of colour seen in some cases of Graves' disease and of diabetes mellitus might give rise to diagnostic difficulty; while chronic heart disease, uterine chloasma, argyria, and pityriasis versicolor have each caused errors in diagnosis.

The pigment in Addison's disease is found in the form of small brown or blackish granules situated in chief part in the cells of the deeper layers of the rete mucosum. It is not, however, entirely intracellular, and a certain amount is frequently found in the superficial layers of the epidermis: the greater part is, however, confined to the deepest layers of prickle-cells, as is the case in the dark-skinned races ([36]).

The skin itself is usually soft and moist, but in some well-marked cases there is a slight localised branny desquamation, and the general surface may be harsh and dry.

Symptoms referable to other systems have been recorded, but are not of the same diagnostic value as those which have just been considered.

The nervous system shares in the general asthenia, and while the muscles may not appear atrophied, the patient may be quite unable to stand without support, and almost unable to make any movement. Cramps in the legs are not unusual, and pains in the back and abdomen are of frequent occurrence. Death may be preceded by coma, and convulsions were marked in one of Greenhow's patients whenever he was touched ([37]): dimness of sight and disturbances of sensation have also been recorded in the later stages, but the intellect is usually clear to the end.

In connection with these nervous symptoms, the fact emphasised by Alexander (38), that congenital atrophy of these glands is always associated with mal-development of the cerebrospinal system, is of great interest, and this observer considers that the suprarenal glands and nervous system are mutually necessary to each other's perfection. And Tizzoni states that in decapsulated rabbits, where death is rapid, the spinal cord and medulla show congestion and hæmorrhage; while, if death is more delayed, submembranous exudation is seen (39).

The urine shows no peculiar characters, though a pigment resembling melanin was described by one observer (40), but this was shown to be a combination of urochrome and hæmatoporphyrin; indican may be present, as in many other conditions. The thyroid may be somewhat enlarged, and the thymus persistent, while the spleen is often enlarged, dark, and soft. The other systems present, as a rule, no features directly referable to the condition of the suprarenal glands.

The diagnosis of Addison's disease is not difficult if the pigmentation be well marked and is accompanied by increasing asthenia and gastric irritability, for which there is no discoverable cause. The profound debility of diabetes mellitus and pernicious anæmia, which bear some resemblance to this asthenia, must be severally excluded by the examination of the urine and blood, and in the former condition also by the polyuria and emaciation.

The characteristic discoloration of the skin and mucous membranes may be closely imitated by that produced by the presence of parasites, but this change of colour is not most deeply marked on the exposed parts or in those areas subjected to pressure and friction, and the presence of the deeply pigmented moles is of differential value. In Addison's disease also the typical distribution is general, though it apparently may be definitely localised, especially in non-tuberculous lesions.

No single symptom is pathognomonic, but the occurrence of asthenia without, as a rule, emaciation, pigmentation of the skin, irritability of the stomach, and feeble circulatory functions, all of which are subject to acute exacerbations and remissions, a feature which is extremely characteristic, and for which no other cause can be made out, form sufficient ground for the diagnosis of some pathological lesion affecting the function of the suprarenal capsules.

When, however, pigmentation is absent or only present in very slight degree, diagnosis is rendered much less easy, and the occurrence of a sudden paroxysm of vomiting, associated with collapse, may suggest irritant poisoning, or some acute abdominal condition, or, as in one of the following cases, influenza of the gastro-enteric type: whilst the discoloration of the skin is frequently attributed to sunburn, which, except that it is usually general, it closely resembles: or to jaundice, from which it may be distinguished by the fact that the conjunctivæ are not stained yellow.

On the other hand, though many cases of Addison's disease escape early diagnosis, cases in which this condition was suspected to exist, but which proved to be examples of other diseases in which some discoloration of the skin was present, are equally numerous: and Greenhow collected eleven cases in which pigmentation was more or less marked and the capsules free from disease ([41]), but in only one of these (Case No. 5) were the symptoms comparable to those of the suprarenal lesion, and in the remainder there were physical signs sufficient to account for all the symptoms present.

There are still many who agree with Greenhow's views upon the pathology of this disease, and it seems to be an established fact that the fibro-caseous tuberculous change in the capsules produces a more typical clinical picture of this condition than does any other morbid change, with perhaps the single exception of the simple atrophy of these bodies.

The prognosis is extremely unfavourable, the large majority of cases dying within eighteen months of the appearance of the first symptom, and but a few even apparent recoveries taking place. The occurrence of periods of intermission, extending sometimes over several months, may give rise to a hope that the disease has been checked, but the symptoms are practically invariably progressive, and death ensues in from five or six days to as many years.

Treatment must be for the main part on general lines; the debility when pronounced necessitates the patient being confined to bed; sudden movements and disturbances, both mental and physical, must be avoided in the fear of producing fatal syncope. The gastric and intestinal symptoms are usually not influenced by dietetic measures, and are best combated by the use of bismuth and opium. Purging must be very carefully approached, as diarrhœa if produced may be rapidly fatal. Iron and strychnia appear in some cases to do good, while the administration of preparations of the suprarenal gland, either in dried or fresh form, has in others been followed by considerable and even lasting improvement; in these cases under its influence flesh is gained, energy increased, and even the pigmentation may to a great extent disappear, and Lauder Brunton ([42]) states that perhaps occasionally complete recovery may occur. Osler quotes Kinnicutt as saying that out of forty-eight cases treated in this manner six were cured and twenty-two improved, a proportion far above that obtained by most observers whose cases have been under prolonged supervision, and it is most probable that the lesion in patients who have shown improvement to any marked extent under treatment with the gland substance was a simple atrophic change, whilst unfortunately the chronic fibro-caseous tuberculous lesion is the typical, and by far the most common, pathological change found in cases of Addison's disease.

The following three cases form a series of, I think, great interest, since, although the first two were typical examples of the condition under consideration, the third was proved at the post-mortem examination to be suffering from an entirely different disease; and although the clinical features presented by this patient during his illness, and the history of the onset of his symptoms, were, with the exception of the length of time during which the skin had been discoloured, identical with those which have been described as characteristic of Addison's disease, the suprarenal capsules and their nervous and vascular connections were found post-mortem to be absolutely healthy.

The history in regard to the pigmentation given in Case 1 is very unusual: she stated that for some weeks before the time at which she was admitted into hospital the discoloration had been improving, although the asthenia and gastric symptoms had got steadily worse. Improvement in regard to the pigmentation is not unusually seen during the periods of remission of the other major symptoms, but I have been unable to find a published record of any case in which the cutaneous discoloration lessened while vomiting and weakness progressed, and it is fair to suppose that this is a very unusual feature of the condition. The pigmentation in Case 2 seemed to improve under treatment with suprarenal gland, but this may have been merely a coincidence. The suprarenal capsules in the first and second cases consisted of firm connective tissue with many caseous and purulent foci and a few deposits of lime salts, showing lesions of very long standing.

Case 1.—K. C., æt. 25, single, dressmaker. Admitted March 5, 1898, under the care of Dr. Gibson, into the Royal Infirmary, Edinburgh.

Complaint.—"Change of colour, vomiting, and a feeling of fatigue, with pains in the back and sides and between the shoulders."

Family history.—Father dead, cause unknown; mother alive and well; no mention is made of any brothers or sisters. A maternal uncle and aunt and two cousins had died of phthisis; there was no history of other hereditary tendencies.

Home surroundings comfortable, and diet good; her hours of work were sometimes very long, and the workroom small and ill-ventilated.

Previous illnesses.—The patient had had measles, scarlet fever, diphtheria, and smallpox as a child, and suffered from cough and anæmia three years previous to the present illness.

The condition which she now complained of began in May 1897, when the patient noticed that her hands and face were getting dark; this she attributed to sunburn. At this time there was no pigmentation of the body or legs, and no other symptoms were present. Two months later she felt breathless on exertion, and she soon began to retch and vomit, and felt extremely tired and weak; the vomiting was unconnected with meals. At the end of July she had to leave her work and was at home for six weeks, and the gastric symptoms improved. The vomiting recurred spasmodically, and for six weeks before admission she was practically confined to bed by the weakness.

The discoloration of the skin became general, and gradually darkened until at the end of the year it was "almost black" on the face and hands; then a few weeks before admission she noticed that her face was getting lighter in colour, and this steadily improved, though the vomiting and exhaustion continued to get worse, until a fortnight before admission, when she saw Dr. Norwell, who gave her medicine which stopped the vomiting, and recommended her to the Royal Infirmary.

On admission, the patient was thin but not emaciated, slightly anæmic, with black hair and deep brown eyes; the skin was of a light bronze colour all over, and scattered over the body and face were many small black spots. Weight, 5 st. $8\frac{3}{4}$ lb.; temperature, 98° F.

Alimentary system.—Lips show patches of pigmentation; gums also pigmented, especially between the teeth; tongue indented at the edges by the teeth, and these indentations are pigmented; there is a white central fur and the tip is red; fauces and deglutition are normal; appetite very poor, and thirst excessive. There is a feeling of oppression after food, and vomiting is very frequent; she has attacks of pain in the epigastrium and between the shoulders, of a dull aching kind. Bowels constipated, but the vomiting is sometimes accompanied by diarrhœa.

The abdomen is of a general light bronze colour, which is deeper at the umbilicus; the scar of a blister on the epigastrium is deeply pigmented; the walls are flaccid; at a point half an inch below and one inch to the right of the umbilicus there is some resistance, and deep palpation here causes pain. Liver and stomach not enlarged.

Hæmopoietic system.—The glands behind the sterno-mastoids have been slightly enlarged since childhood; in both axillæ are a few slightly enlarged tender glands; spleen and thyroid normal.

Blood.—Red corpuscles, 4,000,000; hæmoglobin, 30 per cent. (the leucocytes were not counted).

Circulatory system.—Patient is breathless on exertion, and feels faint at times, but has never lost consciousness. There is faint pulsation in the episternal notch and vessels of the neck. On percussion the heart is slightly enlarged. The cardiac sounds are weak, but closed in all areas, except for an occasional faint mitral systolic murmur.

Pulse rate 84 per minute, wave small and weak, tension low. The rate varied much on exertion.

Respiratory system showed nothing abnormal.

Integumentary system.—The whole surface of the body is of a light bronze colour, especially well seen on the backs of the hands, face, axillæ, and back. There are many small black spots on the face and abdomen; the skin on the forehead, round the mouth and over the knees and elbows, is rough and branny, and there is a dry seborrhœa on the scalp; the legs are not so deeply pigmented, and the matrices of the nails are free from pigment.

The urine is normal in characters and quantity. Catamenia absent for six months; patient has leucorrhœa.

Nervous system.—Patient's sight has been weak since this illness began, but has improved lately; reflexes normal; she sleeps constantly and heavily. Perspiration free.

Further notes.—The patient was put on to suprarenal tabloids, 5 grs. *ter in die*, and seemed to improve until March 18, when the temperature suddenly ran up to 101°·2 F., and the pulse to 100 per minute, and respiration to 40 per minute. She became collapsed, vomiting set in again, and she died from heart failure early in the morning of March 20.

A post-mortem examination was made by Dr. Fleming on March 22, and he reported as follows:—

K. C., æt. 25. *Addison's disease.* Body markedly emaciated, post-mortem rigidity and lividity slight. Body is deeply pigmented, especially in the genitals, axillæ, knees, umbilicus, and nipples, and the mucous membranes of cheeks and tongue in parts are similarly deeply coloured or bronzed. Face is more uniformly bronzed, and there are numerous small "moles" varying in size from a pin's head to a pea, most marked on the face, also seen on the legs and back.

Abdomen.—Large amount of yellow fat, notwithstanding the emaciation. *Liver*, 1 lb. 13 oz., shows marked cloudy swelling. *Spleen*, 4 oz., soft and diffluent, slightly congested; several small hæmorrhages apparently in Malpighian tufts. Liver and spleen both adherent to diaphragm. *Kidneys.*—Right, 4 oz.; left, 4½ oz.; seem distinctly atrophied.

Suprarenals.—Right very adherent to kidney, and is displaced downwards to hilus; it consists of two caseous nodules, hard and cartilaginous at periphery, soft and caseous within; deposit of lime salts has occurred in parts.

Left suprarenal also markedly adherent and displaced downwards, consists of one marble-like nodule similar in appearance to right, but more caseous on section; no deposit of lime salts. No supernumerary capsules were found; the semilunar ganglia appeared normal.

Heart.—Marked hæmorrhage under epicardium; muscle shows fatty degeneration and slight brown atrophy. Aorta slightly atheromatous at its origin. Pleuræ were adherent, and lungs show patches of collapse, and early fibroid change at apices; no evidence of tubercle. Microscopically, both suprarenals showed marked caseous areas and little healthy tissue; several well-marked giant cells in both. Skin showed enormous increase of pigment in cells of rete Malpighii, especially in the "moles." Semilunar ganglia are healthy.

Case 2.—E. H., æt. 23, single, a nursemaid. Admitted to the Royal Infirmary, August 27, 1898, under the care of Dr. Gibson.

Complaint.—"Sickness, pain across the bowels, weakness, and dark coloration of the skin."

Family history.—Patient's father died, aged 65, of heart disease; her mother died of stoppage of the bowels; one brother died of hip-joint disease, and one sister of consumption; one brother and one sister are alive and well.

Patient's surroundings in her situation were excellent. There is no history of previous disease, except measles in childhood. The present illness began at Christmas 1897, when she was confined to bed with "biliousness" for a fortnight; after this she was troubled with retching in the mornings; about this time she noticed that her hands were getting dark, and she consulted her doctor, who diagnosed influenza and jaundice. Since this time the attacks of sickness have returned about

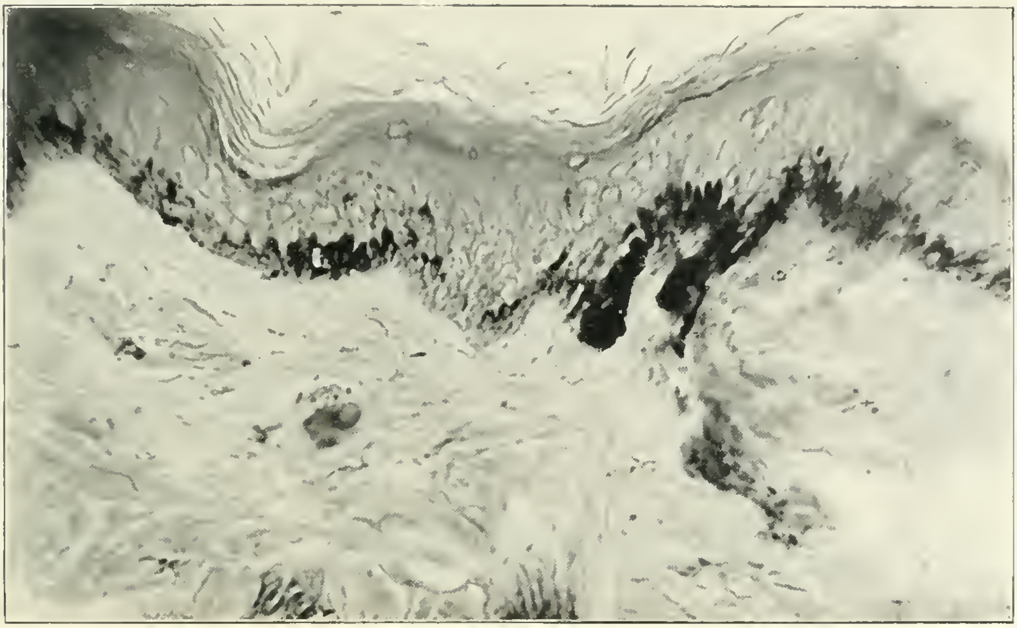

FIG. 1.

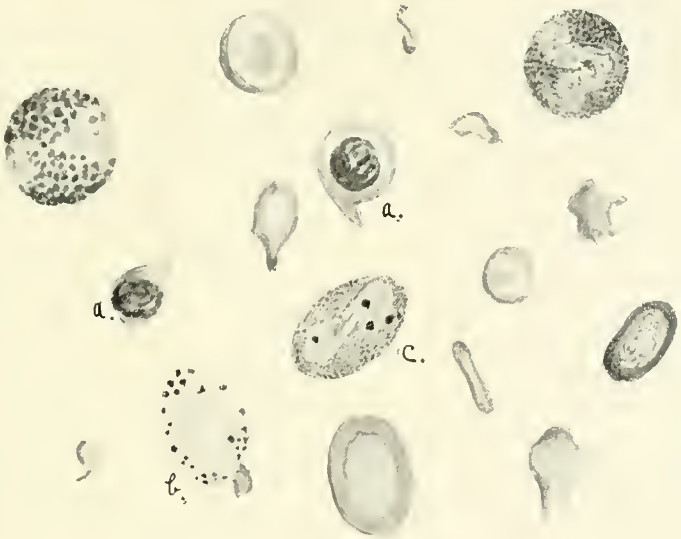

FIG. 2.

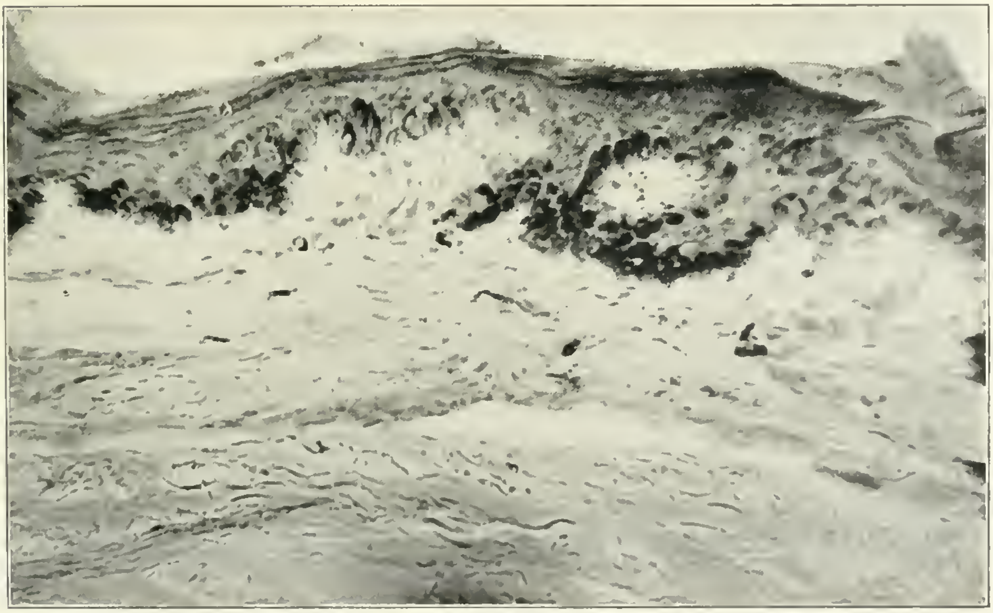

FIG. 3.

every three months, and the face has become discoloured. In June she consulted Dr. Jamieson of Edinburgh, who attributed the colour of the skin to sunburn. In August she had another attack of the retching, and felt very weak; and from the 20th till the 23rd she had violent pain in the abdomen, and as this did not improve, she was admitted to the Royal Infirmary. Between the attacks of vomiting she felt fairly well, but the skin continued to get darker.

On admission, the patient is well nourished; no emaciation, jaundice, or dropsy. The skin generally is of a yellowish-brown colour, darkest on the face and hands; the hair is dark, and there is a dark pigmented mole on the left cheek. Weight, 8 st.; temperature, 98° F.

Alimentary system.—Lips slightly brown at the corners; teeth not good; gums show dark spots between the teeth; tongue shows brown discoloration where the teeth touch it. Appetite good between the attacks (of gastric disturbance), and while the attack is present she has excessive thirst. There are no particular symptoms connected with the stomach except the recurrent attacks, and at these times the vomiting is only in the mornings. The bowels are constipated. The liver and stomach are not enlarged.

Hæmopoietic system.—Spleen and lymphatic glands normal. Blood—red corpuscles, 4,290,000 per cubic millimetre; leucocytes, 26,000 per c.mm. (the hæmoglobin was not estimated).

Circulatory system.—Since Christmas patient had suffered from palpitation and faintness on exertion, and slight dyspnœa. Heart is weak and slightly enlarged. The pulse rate is 82 per minute, regular, volume small, and pressure very low.

The *respiratory system* is normal.

Urine acid, sp. gr. 1020, contains no abnormal constituents. The catamenia have been absent for four months; previously there was some dysmenorrhœa during the flow.

Cutaneous system.—The skin is of general yellowish-brown colour all over the body, and most deeply marked on the face and hands, abdomen, axillæ, elbows, knees, and toes, and also over the spines of the lumbar vertebræ. There is a deeply pigmented band round the waist, and also round the legs where the garters are worn, and over the body are scattered numerous intensely pigmented moles.

Nervous system.—Knee jerks slightly exaggerated; otherwise normal.

Further notes.—*October* 27.—Patient was put upon tabloid suprarenal, 5 grs. *ter in die.* She appeared to improve, and the skin got lighter, but about a week ago the vomiting returned and has continued, and as her friends thought she was dying she left hospital to-day. *December* 16.—Patient reported great improvement; no sickness, pigmentation less; still taking tabloids. *March* 20.—Patient returned to hospital to-day with the following history:—She returned to her situation in the middle of February, and felt well for a fortnight, when she began to feel sick in the mornings again, and soon became extremely exhausted. This got so much worse that she went home on 31st March, and as she did not improve she returned to the Infirmary. The condition is much the same as before, the pigmentation has deepened, and the nipples are very dark in colour, and the skin dry. The patient improved until 21st April, but was very weak, and had attacks of faintness. On this date she had an attack of acute tonsillitis, but made a good recovery; the pigmentation is increasing. *June* 5.—Patient improved steadily until to-day, when she has begun another attack of tonsillitis. Temperature, 103° F. *June* 7.—Patient yesterday felt very weak, and became excitable; her heart grew weaker, and she died of heart failure at 1 a.m. to-day.

Dr. Fleming made a post-mortem examination on the day of the patient's death, with the following result:—

E. H., æt. 23. *Addison's disease.* Body fairly well nourished; post-mortem rigidity slight in legs, absent in arms: body somewhat pigmented all over, especially on face, nipples, umbilicus, labia, and back; mucous membrane of mouth and vagina are pigmented, the latter deeply; there are several pigmented moles on trunk.

Heart, 6 oz.; aortic valve slightly puckered, and shows a few fine fibrous vegetations. Microscopically, heart showed fatty degeneration and brown atrophy. *Lungs* showed slight congestion and œdema, some caseous glands at their roots; otherwise healthy.

Liver, 2 lb. 3 oz., shows early fatty infiltration and cloudy swelling; *spleen*, 6 oz., soft and diffluent, marked acute congestion. *Kidneys*—Right, 5 oz.; left, 5½ oz.; show remains of fœtal lobulation; otherwise healthy.

Suprarenals.—Left much larger than right, firmly adherent to pancreas, which was otherwise healthy. It was about the size of a pigeon's egg. On section, it consisted of dense fibrous tissue, almost cartilaginous, containing large caseous foci, in some of which lime salts were deposited. Weight, about 1¼ oz. Right suprarenal, about normal in size, on section showed several caseous foci and little, if any, evidence of normal tissue. Pancreas healthy, but adherent to the stomach and left suprarenal. Stomach showed marked chronic gastric catarrh, and its capacity was about 40 oz.; it was markedly "mammillated." Semilunar ganglia appeared healthy, and were not involved in adhesions.

Case 3.—T. M., æt. 37, single, a congenital imbecile of no occupation. Admitted to the Royal Infirmary, Edinburgh, under the care of Dr. Gibson, on 4th May 1903.

Complaint.—"Vomiting."

Family history.—There is no history of hereditary tendencies. The patient's father is a medium-fair Scotsman, and his mother, who died of bronchitis and heart disease, was said to have been a very fair-complexioned Scotswoman. Patient has one sister and five brothers alive and well, all reported to be fair. Three sisters died in infancy from unknown causes. The patient has always been neglected and ill-treated, and apparently badly fed; he is not addicted to alcohol or tobacco; his surroundings at home were very bad, and he has not been kept clean since this illness began; he has always been dirty in his habits, and his skin has been very "yellow" since birth, but the colour has deepened very much during the last two months.

This history was obtained from patient's sister, who was fair-complexioned, with a slightly Jewish cast of features. She could give no explanation of their surname Moses, but stated that both parents were Highlanders. The patient had suffered from bronchitis since childhood, but otherwise had been healthy, except for his mental condition.

The present illness began in the end of February; the patient was in his usual health until then, and one morning went out apparently well. In the middle of the day he returned, complaining of headache, which he attributed to some beer which he had been given, and which he was not accustomed to. He went to bed, and on the following day had a good deal of nausea, and vomited once or twice. He did not get up, and became gradually weaker until the date of his admission. The vomiting began again on 3rd May, and as it could not be controlled, he was admitted to the Infirmary on 4th May 1903.

On admission, the patient was in a state of collapse, and unable to sit up in the chair in which he was brought to the ward. His features are Mongolian in type, and his skin is of a general olive-brown colour, resembling that of a Hindu; the hair and beard are black and coarse, and the eyes dark brown. Emaciation and anæmia both very marked; the body is filthily dirty, and is swarming with pediculi; no jaundice or dropsy. Over the left trochanter is the scar of a large ulcer, which is deeply pigmented at its periphery, but not so deeply in the centre. He is mentally very deficient, and has a marked scoliosis, the convexity being to the left. Expression anxious, and he lies with his feet drawn up and toes pointed. Temperature, 96°·4 F.

Alimentary system.—The lips, like the other mucous membranes, are very anæmic; they are moist, and show many clearly defined, pale slate-coloured areas, which are level with the surrounding tissue, and correspend chiefly to points where there is pressure from the teeth. The buccal mucosa shows similar discoloured areas, and slaty patches are also present on the tongue in its anterior third and at its edges. The tongue is very anæmic, but not furred or fissured; gums anæmic, and show a few small pigmented areas. Teeth very dirty, and many carious; deglutition normal. Appetite very poor, thirst excessive, and the patient cries continually for a "drink of water." Vomiting is frequent, and seems irrespective of food; the total acidity of the vomit is 0·14 per cent.; free hydrochloric acid is present; no sarcinæ. Patient has a tendency to diarrhœa, and passes his stools under him.

The abdomen is much retracted in its upper half, but is fuller below the umbilicus, and moves freely with respiration. On palpation, the walls are atrophied and somewhat resistant, and deep palpation over the kidneys causes considerable pain, especially over the left kidney. Stomach and liver not enlarged.

Circulatory system.—Patient does not complain of any subjective symptoms. The visible cardiac impulse is diffuse over the precordia into the sixth interspace just external to the nipple; the veins in the neck are pulsating, but not engorged; the abdominal aorta is pulsating forcibly. Apex beat is best felt in the fourth left intercostal space $3\frac{1}{2}$ in. from mid-sternum; it is sharp and fairly localised, but not sustained. The right border of the heart is 2 in. from mid-sternum in the third interspace, and the left border 4 in. from mid-sternum in the fifth interspace.

On auscultation, in the aortic area both sounds are faint, and the first sound is impure; in the mitral area, first sound is loud, sharp, and closed; the second sound is accompanied by a long harsh bruit, best heard half an inch above the left nipple, and conducted into the axilla; in pulmonary and tricuspid areas both sounds are closed, but weak.

The pulse is regular in time and force, the volume and pressure small, and the tension low; the vessels are not thickened. The heart seems irritable and weak, and the pulse rate varies much, being greatly increased by the least exertion or motion.

The *respiratory system* shows nothing abnormal.

Hæmopoietic system.—Spleen, thyroid, and lymphatic glands are not enlarged.

Blood.

Date.	Per Cubic Millimetre.		
	Erythrocytes.	Leucocytes.	Hæmoglobin.
May 4, 1903 . .	2,000,000	5,000	Under 15 per cent.
May 5, 1903 . .	1,800,000	6,000	10 ,,
May 11, 1903 . .	1,800,000	6,000	Under 10 ,,
May 25, 1903 . .	1,300,000	5,000	10 ,,
May 27, 1903 . .	1,800,000	8,600	12 ,,
June 23, 1903 . .	2,060,000	10,000	About 15 ,,

The blood is extremely pale and watery, and does not coagulate well. The stained films show much irregularity in size and shape of red corpuscles, but no very large forms. A small number of normoblasts are present, but no megaloblasts. The red cells do not form rouleaux, and do not take the stain well. The leucocytes are in about normal differential proportions; a few basophil leucocytes are present, but no myelocytes are to be found. Many neutrophiles show faint iodine reaction, and one or two contain a few granules of deep brown pigment.

The cutaneous system.—The skin is of a general olive-brown or bronze colour, which is deepest in tint upon the forehead and sides of the neck, beneath the eyes, upon the upper part of the chest and the abdomen, especially on the left side, round the umbilicus, and on the penis, scrotum, areolæ, nipples, and axillæ; the knees, elbows, and angles of the right ribs are also darker than the general surface, and there is a dark band round the waist where the patient wore his belt. The areolæ are deep Vandyck brown in colour, and the scrotum is almost black, contrasting strongly with the glans penis, which is very white and anæmic; the darker areas are not sharply defined, but merge gradually into those less deeply pigmented. The backs of the hands are not so dark, but are still very markedly discoloured; but the palms and soles and the matrices of the nails show no pigmentation. There is a cicatrix on the left trochanter, which is deeply pigmented at its edges, but not in the centre; the skin is harsh and dry, and there is a slight branny desquamation in some areas.

Urine.—Amount about 30 fl. oz.; colour, pale straw; sp. gr. 1018; reaction strongly acid; urea, 7·6 grs. to the fluid ounce. Neither blood, bile, albumin, sugar, or pus are present; but indican is present in considerable amount, and there is a deposit of uric acid crystals. There is no pain or difficulty in micturition.

Nervous system.—Patient is a congenital imbecile, and his information is unreliable. He lies almost motionless all day, but cries continually for a drink or a penny. He answers any question put to him either rightly or wrongly, and occasionally originates a remark himself; his expression is cunning, and he keeps his pennies under his pillow, and is very watchful of them. Sensation and sensibility to stimuli are unimpaired; the knee jerks are more brisk than normal. No changes in optic fundus.

The muscles are much wasted, but patient is said to have always been emaciated. He cannot sit up, but can easily lift a cup, and can resist passive movements with some force; sudden movements seem to give him some pain. The bones and joints appear to be healthy.

Further notes.—*May* 5.—Patient's head, face, pubis, and perineum shaved to-day, and white precipitate ointment rubbed into the pubis, while the remainder of the body was well scrubbed with carbolic soap. He vomited three times to-day. *May* 6.—Given tabloid suprarenal, 5 grs. *ter in die.* *May* 16.—Getting weaker; the pulse ran up from 86 to 130 to-day; temperature, 99·4° F.; respirations, 22 per minute. *May* 27.—Patient had cramp in his left foot at 10 a.m., which was found intensely congested and livid; there was no appearance of this condition at 6 a.m. The congestion rapidly spread to the thigh. Mr. MacGillivray saw the patient, and confirmed the diagnosis of thrombosis high up the femoral vein; the thigh is intensely tender. Temperature, 97° F.; pulse rate, 80 per minute. *June* 9.—The foot of patient's bed, which has been raised for some days, was lowered again, as the face and scalp became very œdematous, although the leg became less swollen. *June* 25.—Patient has complained of headache for the last two days, and has now tenderness to tapping over the left temporal region, and there is slight internal strabismus of the left eye; tendon reflexes and muscular irritability much exaggerated, and there is slight head retraction. *July* 2.—Temperature, which has been subnormal for the last five days, was this morning 97° F.; the pulse gradually rose to 120 per minute, the strabismus persisted, and he made no attempt to move or reply to any questions. He died at 10 a.m. to-day, apparently from asthenia. This patient was observed to be getting gradually darker up till his death, though the parasites were destroyed, and he was kept as clean as was possible. The gastric symptoms improved to some extent towards the end of May, when the vomiting recurred, and continued spasmodically till death. Ths suprarenal tabloids, though persevered with, seemed to do no good. Temperature and pulse rate were both extremely irregular, and the former was often swinging, with morning remissions. This patient was shown at a meeting of the Edinburgh Medical Association during his residence in the Infirmary, and was considered by many well-qualified judges to be a particularly well-marked case of Addison's disease, with unusually profound anæmia and emaciation; but this latter symptom, or rather condition, had been present since childhood at least, as had also been a certain amount of discoloration of the skin. A post-mortem examination was made by Dr. Beattie on 3rd July 1903, who has kindly given me the following extract from his report:—

T. M., æt. 38. *Addison's disease?* Marked scoliosis and emaciation; left thigh, leg, and foot œdematous. Skin shows marked pigmentation; slaty pigmentation on tongue and buccal mucous membrane.

Suprarenals.—No special change to naked eye or microscopically. They appear to be healthy; no obvious change in vessels or ganglia in their neighbourhood. In the kidneys there are several abscesses in the cortex up to $\frac{1}{4}$ in. in diameter, apparently spreading along the tubules, most marked in the left kidney; pelvis of kidneys healthy, as is the remainder of their substance. *Liver* weighs 2 lb. 1 oz.; brownish in colour; contains a considerable amount of pigment; no iron reaction. *Spleen*, 9 oz.; very firm; no obvious naked-eye changes. *Stomach, duodenum, intestines*, and *pancreas* all seem healthy. *Heart.*—Marked œdema of pericardium, arterial valves competent, muscle brownish, and shows well-marked interstitial myocarditis and brown atrophy. *Lungs.*—Slight œdema and bronchitis; otherwise healthy. There is a recent thrombus in left femoral vein, extending from the iliac to the popliteal. *Brain* and *cord* nothing abnormal, except pigmentation of membranes of the cord. Sections of the skin showed considerable deposit of pigment granules, chiefly in the deepest cells of the Malpighian layer, but also to a much less extent in the more superficial cells. The pigment was of a deep umber-brown colour, and where present in large quantities appeared almost black.

The mucous membrane of the mouth, in the discoloured areas, showed the same pigmentary deposit, but to a very much less marked degree.

To review the main points of the case: The patient was of Highland extraction, according to his sister's statement; was called Moses, and was a congenital imbecile. He was admitted to the Infirmary with a history of sudden nausea and collapse, beginning rather more than two months before he came under treatment, and which had steadily progressed until intractable vomiting had set in, two days before admission. He was found, on examination, to present the following group of symptoms:—"Anæmia, general languor and debility, remarkable feebleness of the heart's action, irritability of the stomach, and a peculiar change of colour in the skin," and patchy discoloration of the oral mucosæ and tongue.

In addition to these features, he was markedly scoliotic, and extremely filthy and verminous. His face and head were those of a Mongolian idiot, and he exercised no control over his sphincters, although this seemed to be due more to his apathetic and debilitated condition than to any actual paresis of these muscles.

He showed a marked degree of emaciation, but this was said to have been always present, and not to have increased materially since the onset of his final illness: and the discoloration of the skin, which had been present since a very early age, if not since birth, was said to have increased much in depth during the progress of the disease, and it undoubtedly became more marked during his residence in hospital, notwithstanding his improved hygienic surroundings and enforced cleanliness.

There were no deeply pigmented moles on the body; but the pigmentation was otherwise quite typical of Addison's disease, being strongly marked on the face and hands, and particularly deep on the penis and scrotum, areolæ, nipples, axillæ, and umbilicus, and also round the waist where pressure was made by the belt, and at the margin of the cicatrix upon the left trochanter, but not in the centre, where presumably the deeper tissues had been injured. Furthermore, the palms of the hands and soles of the feet, and also the matrices of the nails, were free from any signs of pigmentation. The discoloration was general, the darker and lighter areas merging gradually into one another; and sections of the skin showed the pigment granules to be in the deep layers of the epidermis, which is the position occupied by them both in Addison's disease and in the pigmentation of pediculosis.

The patient got steadily worse, with one slight remission; the vomiting, which at first improved, returned, and was accompanied by diarrhœa; the languor and cardiac debility increased, and the patient finally died of asthenia, death being preceded by signs of basal meningitis and greatly increased muscular irritability; and at the necropsy all that was found was the existence of some small suppurating foci in the cortex of either kidney, with a large deposit of iron-free pigment in the liver, and increased pigmentation of the spinal membranes. The suprarenal glands and semilunar ganglia appeared healthy; there was no increase of lymphoid tissue in the stomach; the spleen was not congested and diffluent, but firm and somewhat small, and the heart showed advanced brown atrophy and interstitial myocarditis. The renal abscesses were found to be tuberculous, but, apart from this deposit, there were no signs of other tuberculous disease either recent or old-standing; and the lungs were, except for some terminal œdema, healthy, as were the abdominal organs other than the kidneys.

The urine, though carefully examined, was at no time found to contain pus, and this is accounted for by the fact that the abscesses were small and definitely localised to the cortex of the kidneys, and the condition was in a very early stage; indeed, the disease had made such slight progress, that it seemed hardly possible that it was the sole cause of death, or that it could have produced symptoms of such extreme urgency. As, however, no other lesion was discoverable, death was apparently due to tuberculous pyonephrosis.

The first thing to catch the eye in connection with this patient was the extremely marked pigmentation of the skin, which has already beend escribed; and, secondly, the presence of swarms of parasites; and these two features appeared to be in the relation of effect and cause.

The cutaneous pigmentation of phthiriasis has the following characters:—

The skin is thick, dry, and harsh; discoloration may be general or patchy, and in the latter case the margins of the discoloured areas are sharply defined (43). The colour of the pigmented parts is of a brownish or blackish tint, and may be very deep indeed. It is usually most marked upon the back of the neck, chest, upper part of the abdomen and back, and frequently also upon the sacrum and the thighs in their outer aspects. The face, hands, and feet are but little affected, as are the nipples, areolæ, and genitals, a fact which is of the utmost value, as Dubreuilh (44) points out, in differentiating this condition from the melasma of suprarenal disease, which it so closely resembles.

The irritation produced by the pediculi, more especially in those individuals who have more recently acquired them, often causes scratching, and thus the skin usually shows old cicatrices and recent hæmorrhages; and though the essential pigmentation is of an iron-free kind, there is thus a combination of hæmosiderosis and melanosis which does not occur in Addison's disease. Again, the scratching often causes a pustular eruption to appear, which, when healed, shows small white cicatrices on the discoloured background. These features may, however, not be present if the disease is not accompanied by pruritus, although in these cases the pigmentation may be very marked.

Further, in phthiriasis the mucous membranes may show a slaty and patchy pigmentation, which is identical with that which Greenhow (45) described as being among "the strongest characteristics" of Addison's disease, and which was well marked in a case, recorded by Chatin (46), of a chiffonnier, aged 78, who was infested with vermin. In phthiriasis, also, pigmented moles may be seen; but Greenhow (47) called attention to the fact that in a case of his these moles were all upon the parts of the skin which were not discoloured, in which they differed from those seen in Addison's disease.

The seat of the pigmentation appears to be the same in both conditions. Audrey (48) states that in the parasitic affection the pigment is diffused through the Malpighian layer of the skin, but is chiefly in the rete mucosum ("Keim Schuch"); and Dubreuilh (49) found it in the lower reproductive layers ("couches génératrices") of the epidermis, and also in the derma, in the neighbourhood of the lymphatics, in loose granules and branching cells. The pigment is in the form of fine brownish or blackish granules, which resemble those of Addison's disease as closely as do the sites of its distribution in the skin. The discoloration of phthiriasis, both cutaneous and mucous, according to Dubreuilh, diminishes in some weeks, and after a time almost disappears, if the parasites are destroyed and the patient is well fed and kept clean.

The skin condition in the patient T. M. resembled that of phthiriasis in the following points:—The skin was harsh and dry, pigmentation was general, but not present in the form of pigmented moles. The backs of the hands were not so deeply discoloured as many other areas; pigmentation was very marked upon the back of the neck, chest, upper part of abdomen and back. It differed from the pigmentation of phthiriasis in that it was very well marked on the face, legs, and arms, and of a particularly deep shade on the nipples, areolæ, penis, and scrotum, and that there were no signs of scratching or white, healed cicatrices; and the discoloration was marked round the umbilicus and in a band round the waist, and in these points it was identical with that seen in Addison's disease, as also in the fact that there was no improvement under improved conditions, also the darker and lighter areas merged gradually into each other, and the more superficial parts of the cicatrix over the trochanter were deeply pigmented.

The mucous pigmentation and the layer of epidermis in which the pigment is chiefly collected are the same in the two conditions; but it appears to me, from the study of sections of the skin, that in the parasitic affection the extracellular deposit is greater than in Addison's disease, where the pigment is chiefly inside the cells massed round the nucleus.

In this patient the pigment was to some extent extracellular, but this differentiation is not well marked, and in Addison's disease the pigment is, in many cells, largely at the periphery. On the whole, the pigmentation in this case much more closely resembled that of suprarenal disease than that caused by the presence of the parasites, to which in all probability it was at least in some part due.

Another very prominent symptom in this patient was the anæmia, which was of a high grade. There were none of the characteristics of pernicious anæmia, no large erythrocytes were present, and the colour index was about 0·3; the appearances were those of severe chlorosis, but the eosinophiles were not very markedly decreased. It is difficult to find a cause for this profound anæmia, as none of the usual etiological factors were present, and chlorosis, if it occurs at all, is extremely rare in males; possibly the renal disease, the debility, and the mental condition and want of proper nourishment all combined to produce this impoverished state of the blood. There was, however, little improvement after several weeks of cleanliness and good feeding; this anæmia, though unusually profound, was not, as has been shown, incompatible with a diagnosis of Addison's disease, in which it may be so marked as to suggest the "idiopathic" form. A moderate anæmia is common in the later stages of tuberculous pyonephrosis, but it is very rare to find it in such an advanced degree when the renal disease is yet in an early stage.

The marked asthenia shown by this patient may have been due to the blood condition to some extent, and there was also great emaciation; this, however, had been present since early youth, whereas the asthenia set in with extreme suddenness, such as is seen in some cases of suprarenal disease; this symptom also is not easy to account for, unless it was produced by the combined effect of the early renal tuberculosis and the blood condition on an already imperfect nervous system. Further, the post-mortem appearances of the stomach did not show any signs of any change to account for the nausea and subsequent uncontrollable vomiting; and, on the other hand, there were none of the changes so often associated with Addison's disease, no mammillation or abrasions.

The pathological state of the heart was only what might have been expected in a subject showing such an extreme degree of debility and of emaciation, and will fully account for the feeble excitable pulse, which was another factor in the diagnosis.

The presence of all these symptoms may thus be explained without the supposition of a lesion interfering with the suprarenal function, with the exception of the pigmentation, which was very characteristic of capsular disease. The diagnosis of this condition was negatived at the post-mortem examination, but is it possible that there may have been some lesion which was not pathologically recognisable?

In his Goulstonian Lectures, Rolleston (50) refers to the researches of Alexander, who found that in still-born infants who showed mal-development of the suprarenals, the central nervous system was never perfect; and he believed these two structures to have a mutual developmental influence. If this be the case, is it not possible that in the patient Moses both the central nervous system and the adrenals were congenitally deficient, and that these glands produced an anomalous secretion, deficient, and latterly even perhaps entirely wanting, in its normal physiological properties, thus causing the symptoms of Addison's disease?

It may be urged that this is going far afield for a cause which is to be found near at hand, but the pigmentation was in many essentials other than that of phthiriasis, and in these particulars it resembled that of the suprarenal condition, though probably the parasitic infection also played some part in its production; this theory of congenital defect may explain the presence of the discoloration since childhood, that is, for at least thirty years, which does not easily fit in with the parasitic theory.

A semi-analogous anomaly of secretion may be found in the absence of spermatozoa in the seminal fluid when the testicles are seemingly healthy (51); and though, in putting forward this theory, I feel that I am upon ground which is far from firm, my justification is that this patient appeared, during life, to suffer from, and finally to die of, Addison's disease of the suprarenal capsules. It is a matter for regret that in this case the semilunar ganglia were mislaid before they could be examined microscopically: they were, however, very carefully examined by naked eye, and appeared to be quite healthy, and neither they nor any of the nerves, blood vessels, or lymphatics in the neighbourhood of the suprarenal glands, were implicated in masses of inflammatory tissue, or in any other pathological lesion.

In conclusion, if, as seems probable, the subject of this third case was not in truth an example of Addison's disease, the simulation was far closer than that shown by any other recorded case which I have seen; not only with regard to the pigmentation, but also in the accompanying nervous, gastric, and cardiac symptoms, which, when coexistent, point so strongly to disease of the suprarenal capsules.

Since writing the above, Dr. H. G. Brooke of Manchester has kindly sent me a reprint of his article dealing with the action of arsenic on the skin, as observed during the epidemic of arsenical beer poisoning in Manchester during the year 1900 ([52]), which shows that the pigmentation in many respects closely resembled that of Addison's disease, except that it was usually less marked on the exposed parts and less general in its distribution; the skin also appeared more dirty than bronzed, and there was considerable atrophy of both epidermic layers and corium.

This pigmentation was frequently preceded by marked pruritus, thus resembling that produced by the presence of pediculi, which gave rise to signs of scratching and consequent pustulation and cicatrisation.

DESCRIPTION OF PLATE XVI.

FIG. 1.—Micro-photograph of skin of patient, K. C. (Case 1), showing deposit of pigment in the deeper layers of the rete mucosum.

FIG. 2.—Cells from blood of patient, T. M., showing high-grade anæmia, two normoblasts (*a*); a mast-cell (*b*); and a polymorph containing pigment granules? (*c*).

FIG. 3.—Micro-photograph of skin of patient, T. M. (Case 3), showing pigmentary deposit.

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REVIEWS OF
BRITISH AND FOREIGN LITERATURE.

Arhythmia of the Heart: A Physiological and Clinical Study. By K. F. Wenckebach, Groningen. Translated by Thomas Snowball, M.B., M.A. With Seven Plates, and Twenty Figures in the Text. Edinburgh and London: W. Green & Sons.

It has been stated by more than one writer on diseases of the heart, that when a patient comes into the physician's consulting room, complaining of his or her heart, usually there is no cardiac disease. The persons who complain of the heart being a source of disturbance, have usually some neurosal affection of the organ; the modifications of rhythm are produced by nervous causes, and not from valvular lesions, or from changes in the myocardium.

Irregularities in the rhythm of the heart are very readily recognised, and yet the significance of the irregular action has much more often been misunderstood than correctly interpreted. Even in the medical mind the idea has always been prevalent, that something is very far wrong with the heart if it presents an irregular rhythm; and, until quite recently, an intermittent pulse was constantly regarded as a symptom full of grave import, and was looked upon as the forerunner of death. The seriousness of irregularity has been grossly overstated, and we owe much to Mackenzie, who, in a recent valuable study of the pulse, has done a great deal to clear up the mystery which has for so long surrounded this subject.

In the work by Professor Wenckebach, now under review, many of the results published by Mackenzie, derived almost entirely from the clinical standpoint, are fully confirmed. Wenckebach has worked at the subject mainly from the physiological side, and his conclusions are largely based upon the results arrived at by Engelmann and others, who have made an experimental study of the functions of the heart muscle. Physiologists have now established the important fact that the cardiac muscle itself is endowed with all the properties necessary for carrying out its work, that is, the organ can develop and maintain its normal rhythm if separated entirely from its nervous connections; the vagus and sympathetic nerve fibres have merely an action as regulating influences. Professor Wenckebach is an enthusiastic disciple of Engelmann, and, we think, attributes too much of the admirable work which has been done on the functions of the heart muscle to this eminent investigator. We fear that German observers do not always recognise the priority of British work, and are too apt to borrow new ideas without troubling to say from whence they got them. These ideas, we admit, are often elaborated, and their value thereby greatly enhanced, by German workers. As regards the question of the functions of the heart muscle, however, the really essential points were discriminated by Gaskell and his school many years before Engelmann worked out the details, and applied technical terms to some of the more striking phenomena.

In the first part of his book, Wenckebach deals with the theory of the myogenic action of the heart, and this theory is essentially different from that which was usually taught less than ten years ago. Hence its general acceptance would lead to a complete revision of the views previously held on many points in cardiac pathology, and the chapters dealing with the subject of motor disturbances of the heart, in the various standard text-books of medicine, would require to be re-written. The theory in which the myogenic origin of the heart's action is advocated may be stated in this way: The stimulus which causes the contraction ("contraction stimulus") is formed in the heart muscle cells themselves, and is therefore not rhythmically conducted from the nervous system to them. This property of automatic action belongs to the entire heart, but the muscle cells situated at the venous end possess it in greatest measure. This view is most suggestive and interesting, as affording an explanation of the remarkable cases of bradycardia—the so-called Stokes-Adams syndrome. In these cases the pulse rate may vary from twenty-four to thirty beats per minute, and this is due to the fact that there is present a condition known as "heart-block." There is a failure of conductivity in the cardiac muscle, and the phenomenon can be followed with perfect accuracy in the dying frog's heart. This failure occurs especially at the auriculo-ventricular groove, and ultimately becomes so complete that an auricular systole is no longer followed by a ventricular; the auricles may contract three or four times before the contraction stimulus to the ventricle gets through. Perhaps the most important contribution to the subject of heart-block in man was recently made by Mackenzie (*Brit. Med. Journ.*, London, 1902, vol. ii.), who, in the case described, succeeded for the first time in recording the action of all four chambers of the heart in man, and in establishing beyond doubt the complete heart-block, the continued contraction of the two auricles, and the simultaneous cessation of both ventricles. In these cases, then, the systoles of the ventricles fall out; or, in other words, the conduction is arrested at the auriculo-ventricular groove, and a great many cases have now been recorded to prove this with certainty. One recent case of great interest in this connection may be mentioned (Handford, *Brit. Med. Journ.*, London, December 1904), where a bradycardia of this nature was found associated with the presence of gummata and syphilitic inflammatory products in the region of the auriculo-ventricular groove, thereby, in all probability, interrupting the continuity of the muscular fibres. This case would seem to afford additional proof that such alterations in the heart's rhythm are really due to a disturbance of one of the essential functions of the cardiac muscle—that of conductivity. We may mention, however, that Dr. George Gibson, who has recently observed several such cases over a long period, leans to the theory of a sclerosis of the cerebral vessels as a causal condition. He says: "In sclerosis of the cerebral vessels, whenever there is any stress put upon the circulation, the blood supply to the brain is inadequate and ineffective. There is, as a result of that deficient supply, a condition of irritable weakness of the inhibitory mechanism; impulses are sent down to the heart; it is inhibited, and the features of the attack are found."

The last chapter of this book, which deals with the clinical types of arhythmia, is extremely interesting, and every physician engaged in the study of the affections of the heart will find it necessary to peruse it carefully, in order to bring his methods of diagnosis and treatment up to date.

For the English version of this remarkably original work we express to Dr. Snowball our grateful thanks. In the labour of translation, and in the conversion of many obscure points (expressed in sentences of German construction) into intelligible English, he has had the invaluable assistance of Dr. Mackenzie. We congratulate him heartily on the uniformly successful manner in which he has rendered the author's meaning. This edition is supplemented by a short appendix, dealing with several points in the literature which appeared since the publication of the original book. A bibliography of 125 references is given, and there is also an index, which might, with advantage, be greatly enlarged. The publishers have performed their part of the work with their customary excellence.

A Manual of the Practice of Medicine. By Frederick Taylor, M.D., F.R.C.P. Seventh Edition. London: J. & A. Churchill.

We welcome the publication of a new edition of this "Manual of the Practice of Medicine." The Manual, in its former editions, has obtained a foremost place among those text-books of medicine adapted to the student, and the appearance of a new edition is a further proof of its continued popularity and utility.

The work, which now contains over a thousand pages, has been revised, and, whilst additions and alterations have been made, among the subjects introduced for the first time are sleeping sickness and trypanosomiasis, diseases of the cauda equina and conus medullaris, family periodic paralysis, arsenical poisoning, infective arthritis, and some of the rarer diseases of the skin. The changes have added not a little to the value of the Manual.

In the earlier sections, the clinical features of the acute infectious diseases are admirably delineated, but more information might with advantage have been afforded regarding the bacteriology of enteric fever, influenza, plague, tetanus, etc., and there is little explanation afforded of the mode of action of antitoxic and bactericidal sera. Over two hundred pages are devoted to the diseases of the nervous system, which is consequently treated of in as full detail as the student requires. We note that the author, writing of Babinski's sign, says it may occur in cases of functional paralysis. The diagnostic value of the Achilles jerk in tabes dorsalis is hardly sufficiently commented on, for it is not pointed out that the loss of the Achilles jerk often precedes abolition of the knee jerks.

Acute lobar pneumonia is included in the section on diseases of the organs of respiration. The author speaks of the presence of the pneumococcus in the blood in severe cases of pneumonia, but does not bring out the fact that these cocci may be detected in the blood in a considerable proportion of cases, whether severe or otherwise. In the sections dealing with the circulatory system, we might comment on the apex beat being described as situated in a line drawn vertically down through the nipple, on valvular vegetations being situated along the margin of a valve, on aneurysmal pulsation being synchronous with the cardiac systole and the radial pulse, and on the absence of reference to the extra or premature systole, and to blocked heart as a cause of pathological bradycardia.

Chemical analysis of gastric contents is touched on very lightly, and in the sections treating of appendicitis and empyema the reader will find no mention of the examination of the blood as an aid to diagnosis.

In certain respects, therefore, the Manual has not been brought quite up to date, but, in spite of its shortcomings, it is still a very instructive and suitable book for the student.

An Atlas of Human Anatomy for Students and Physicians. By CARL TOLDT, assisted by ALOIS DALLA ROSA. Translated by M. EDM. PAUL, M.D. London: Rebman Ltd.

THE care bestowed by the translator upon the earlier volumes of this atlas is again clearly in evidence in the case of those which have appeared more recently, and much trouble has been taken to make the work as useful as possible to English readers familiar with English text-books of anatomy.

The work as a whole is no mere translation of the original German letterpress, for the author has been at much pains to give clear explanations in all those cases where the terms used in the German edition do not correspond with those adopted by English writers. The copious Appendix, which is given at the end of each of the last three volumes, will prove of the greatest use in enabling the reader to determine exactly in each case what structure is referred to in the text, and to find the equivalent term used by standard English authors. The preparation of these Appendices has entailed much careful work, and their addition enormously increases the value of each of the volumes as a book of reference.

The plates themselves contain very many striking figures, but they are now so well known that nothing need be said regarding them. It is a pity, however, that the insertion of more than one name for each of the various structures illustrated, has crowded the letterpress of the English edition. This reduplication of names is in very many cases absolutely unnecessary, and often not only causes crowding but also confusion in the references to the various parts of the figures.

Handbook of Diseases of the Ear, for the use of Students and Practitioners. By Richard Lake, F.R.C.S. (Eng.). Second Edition. London: Baillière, Tindall, & Cox. 1904.

The production of a second edition of this book one year after the publication of the first is evidence of the claim for recognition which it has established. It was not to be expected that much alteration would be found in the general scope of the book in so brief a period of time. Certain minor changes have, however, been made in the direction of improvement, though we are compelled to note that faults in spelling have escaped the notice of the author. We think it a pity that anything more than mere mention of the use of the electrolytic bougie should have been made in the treatment of Eustachian stenosis, the more so when the brief description which is given is incorrect in a very important detail. It is a delicate method of treatment which the student or practitioner is not likely to carry out, and if they attach the positive pole of the battery to the metal bougie in the Eustachian tube, as the author advises, they are hardly likely to meet with success. The volume, however, contains many points of practical value, and should be a useful addition to the library of the student of medicine.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF
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NERVOUS DISEASES.

Dysbasia Angio-Sclerotica (Intermittent Claudication).

Erb, who in 1898 was one of the first to describe this disease, returns to the subject in the *München. med. Wchnschr.*, 1904, May 24, with a paper based on the cases he has seen during the last six years. As these are no fewer than forty-five, the malady is sufficiently common to merit attention, especially as it appears to be a not infrequent precursor of senile gangrene. The clinical features of typical cases (and these formed thirty-eight of Erb's new series) are paræsthesia and pain in the legs, tension, pain, and stiffness in the calves, and vasomotor disturbances—coldness, pallor, and cyanosis, or heat and redness—in the feet, all of which occur on walking, and impede progression to such an extent that the patient has to pause for rest after he has walked for a quarter of an hour, more or less. After a brief rest, the symptoms abate completely, but as soon as the patient sets out again the scene is re-enacted. Added to this clinical picture is the fact that the pulsations of the anterior and posterior tibial arteries are either quite imperceptible, or the vessels themselves are extremely small and contracted, showing evidence of arterio-sclerosis. The last sign is essential to the diagnosis. In Erb's atypical cases, seven in number, along with some of the aforesaid subjective phenomena, not necessarily so marked as to prevent the patient's walking, this absence of the pulse was always found. In two-thirds of the patients the disease was bilateral, in the remaining fifteen the left leg was affected eleven times. In only four of the thirty-eight typical cases could pulsations (though extremely feeble) be felt in each of the four arteries. Sometimes the popliteal, and even the femoral pulse, was also absent. The vasomotor disturbances met with in the majority of patients usually take the form of subjective and objective coldness of the feet; in two cases only did actual gangrene occur. The diagnosis of intermittent claudication is easy, it being only necessary to examine the state of the arteries and to exclude spinal symptoms. The etiology of the disease is not clear, but the following are some of the points brought out in Erb's paper:—Males are chiefly affected; the disease is much more common among the well-to-do than among the working classes; it usually occurs in the fourth and fifth decades. Syphilis and alcohol are not important factors, but probably excess in tobacco is. Next to nicotin poisoning, exposure to cold seems to have most causal significance. The treatment consists in giving up tobacco and warding off cold, and in the use of iodides, cardiac tonics, and galvanism. Without being brilliantly successful, these measures often control the disease.

Nervous and Mental Diseases after Accidental Electric Shocks.

The ever-increasing employment of electricity in industrial life has naturally led to a growing tale of accidents to workmen and others, and in these papers Eulenburg (*Berl. klin. Wchnschr.*, 1905, Nos. 2 and 3) deals, not with the immediate consequences of currents of high voltage passing through the body, but with their remoter results in the shape of nervous and mental disease. Like all other accidents, especially such as occur to workmen during the course of their occupations, those produced by electrical currents may give rise to traumatic neurosis, hysteria, etc. In thundery weather, especially in summer, a number of so-called "electric accidents" (*electrische Unfälle*) occur among female telephone operatives, which are ascribed to atmospheric electrical discharges conveyed by the telephone wires. Eulenburg finds that nearly all such cases occur in young, nervous, and anæmic women, and that they are really "emotion-" or "fright-neuroses" produced by the sudden shock of hearing sounds of distant thunder conveyed by the telephone. The causal connection between *general paralysis* and a previous electric accident is of great clinical and forensic importance. The writer quotes his evidence in a medico-legal case of this kind, in which he traced the development of general paralysis to a severe electric shock received seven months previously. In two other cases the disease also came on after such an accident, but at longer interval—two and three years respectively. Another chronic degenerative disease of the central nervous system which may follow a shock is *multiple sclerosis*. Eulenburg observed the disease occur in a man whose occupation constantly exposed him to the risk of receiving shocks of varying intensity; some so severe as to throw him down and to merit the name of "accidents." Following severe shocks we may also have *progressive degenerative changes in the nervous system of an anomalous character*, as in the case of a man who, after being stunned by a "live" wire falling on his head, suffered from tremor, various subjective sensations, weakness in the limbs, maniacal seizures, and finally sank into dementia. In estimating the severity and danger of an electric shock, the voltage alone must not be considered; in any individual case the resistance is far more important in determining the absolute quantity of current passing through the body. It is an error to suppose that the lowest level of danger is a current of 500 volts; much lower voltages may be fatal—*e.g.*, 95 in the case of a chemical worker whose hands, feet, and clothes, as well as the ground, were soaked with soda solution; while, on the other hand, far higher voltages may be harmless if the resistance of the body be great.

MICROGRAPHIA: ITS RELATION TO MACROPSIA.

PICK (*Wien. klin. Wchnschr.*, 1905, No. 1) discusses the occurrence of micrographia, or abnormal diminution in the size of the handwriting (an affection which he has already described in certain forms of gross central lesion) as a functional transient symptom in hysteria. His patient was a girl suffering from serious hysterical manifestations, among which dreamy mental states accompanied by contraction of the visual fields were prominent. On examination one day when she was alternating between these and normal orientation, it was found that she had macropsia. On being asked the names of persons and objects previously familiar, the general tenor of her replies was that they resembled so and so, but were far too large. In this condition her writing was microscopic; shown some old letters of her own, she denied their authorship, saying, "I never write so big as that." On her return to the normal, it was found that she was utterly unable to write in the peculiarly minute way characteristic of her hysterical seizure. In explanation of the transitory micrographia, Pick first considers, only to reject, the possibility of its being due to a psychical reversion to childhood; neither the writing nor its content having any infantile peculiarities. Nor does the apparently obvious view that the macropsia caused the micrographia seem satisfactory to him, because, first, in none of the records of micropsia or macropsia is there any account of the writing being affected; and, second, the erroneous judgments in these visual affections are corrected by the muscular sense when movements based on them (the erroneous judgments) are attempted. Pick's view appears to be that both the micrographia and the macropsia had a common cause, and that a functional disturbance of the muscular sense, whereby the centripetal impulses aroused by the muscular movements of the eyes and hands, created unduly large, and therefore false, mental impressions. He finds an analogy to his case, though in the contrary sense, in a patient in whom, during an attack of micropsia, every movement of the limbs or trunk assumed exaggerated, almost gigantic dimensions, and this even though the eyes were closed. Here too the supposed explanation was a perversion of the afferent kinæsthetic nerve impulses.

SURGERY.

UNDER THE CHARGE OF

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Blindness following Injection of Paraffin for Nasal Deformity.

Various accidents following the injection of paraffin have been recorded. Among the most serious of these must be regarded two cases of blindness caused in this way, referred to in *Arch. f. klin. Chir.*, Berlin, Bd. lxxiv. S. 922, and to these Mintz (*Centralbl. f. Chir.*, Leipzig, 1905, No. 2), adds a third. His patient was a woman, æt. 25, suffering from nasal deformity due to syphilis. In September 1903, 1 grm. of paraffin was injected with benefit to her appearance, but a year later she returned for further treatment. On the second occasion Mintz injected about one-third of a gramme of paraffin, melting at 43° C., from two punctures, right and left, on the nose. In a few minutes the patient complained of pain in the left eye, and this was quickly followed by complete loss of vision in that eye. On the following day œdema of the eyelids, exophthalmus, chemosis, and corneal opacity appeared, and some skin over the injected paraffin sloughed. The ultimate result was complete and permanent blindness in the left eye. Mintz infers that the injection caused thrombosis in the external nasal veins which spread by continuity to the ophthalmic veins and the cavernous sinus, the direct cause of the blindness being the accompanying thrombosis of the central vein of the retina. He was unable to attribute the accident to any fault in the technique of the injection, and holds that the possibility of such accidents must always be taken into account and represented to patients who wish paraffin injected for cosmetic purposes.

The Serum Treatment of Tetanus.

The value of antitoxin in the treatment of tetanus is still uncertain. Numerous cases of recovery from the disease after the use of antitoxic serum have been recorded, but on examination they are found almost without exception to have been cases of subacute or chronic forms of tetanus, of long incubation period, of slow development, and of moderate intensity, cases in which recovery was the rule before the introduction of the serum treatment. Suter (*Arch. f. klin. Chir.*, Berlin, Bd. lxxv. Heft 1, S. 113) in an interesting paper records the results of the serum treatment in the Geneva University clinic since its introduction, and discusses the value of the serum as a curative and as a prophylactic agent. He records fourteen cases in all. Of these, two recovered and twelve died. Of the two recoveries Suter says, "We must say that these two would in all probability have recovered without any form of treatment, for the incubation period was a long one, the development of the disease very slow, and the symptoms exceptionally mild." In seven of the twelve fatal cases the injections were made into the cerebrum; in the remaining five subcutaneously. Intracerebral injection has now been given up in the Geneva clinic, as elsewhere, for, as Suter clearly brings out, there is no evidence that intracerebral injections have any special value, and they are by no means devoid of danger, hæmorrhages of varying size and even cerebral abscess having followed their use. A more rational plan for bringing the antitoxin into direct relation with the central nervous system, is to inject it into the spinal subarachnoid space by lumbar puncture. This was done in one of the two recoveries recorded by Suter. The twelve fatal cases seem to show that antitoxin is of little if any value in the treatment of acute tetanus, whether administered subcutaneously or by intracerebral injection. Some of the patients, it is true, did not come under treatment till the disease had been active for several days, but in three cases the serum was injected within thirty-six hours of the first appearance of symptoms, without any apparent benefit, failing to modify the course of acute cases just as injections fail at a later stage of the disease. It is noteworthy that in the two recoveries the injections were first made on the sixth and tenth days. Although the curative value of tetanus antitoxin is probably nil, it has proved of undoubted value as a prophylactic, especially in veterinary practice. The experiments and working experience of Nocard, Bigot, and Farland, quoted by Suter, show this conclusively. The difficulty of estimating the value of prophylactic injections in the human subject is obvious. Suter quotes many writers who have urged and practised the use of prophylactic injections of antitoxin in all cases of suspicious wounds, with apparent success. The experience of Rosthorn is among the most interesting in this respect. An epidemic of tetanus which broke out in his obstetrical clinic, and reappeared in spite of the most thorough disinfection of the premises, etc., was checked by the use of prophylactic injections of antitoxin. Perhaps of more value are a number of cases quoted by Suter where tetanus appeared after prophylactic injections, in two cases ending fatally, in ten in recovery. The results attained so far certainly seem to justify the statement that prophylactic injections are of value in the human subject in preventing tetanus, and also that when tetanus does follow their use it is in the great majority of cases of a mild type, ending in recovery.

A Case of Prostatism without Enlargement of the Prostate.

Every now and again it happens that an operation is undertaken for the relief of the symptoms of prostatic enlargement, and when the bladder is opened no obvious obstruction to the outflow is to be found. Moran of Brest records such a case (*Ann. d. mal. d. org. génito-urin.*, Paris, 1904, tome xxii. p. 1856). The patient, æt. 65, suffered from all the classic symptoms of an enlargement of the third lobe of the prostate. On rectal examination, the lateral lobes were not unduly enlarged, but when the bladder was full a distinct fluid swelling could be recognised projecting towards the bowel. On cystoscopic examination, what appeared to be a projecting third lobe was observed. Boltini's operation was performed with the aid of Freudenberg's apparatus, but without benefit. Later, the bladder was opened suprapubically, and it was found that the cause of the pouching at the base of the bladder was the formation of a firm fibrous band which stretched across the bladder below the urethral orifice. The orifice was unduly high, and the neck of the bladder was distorted. A deep cul-de-sac existed behind the fibrous barrier. The band was divided by means of the thermo-cautery, three incisions having been made, one passing downward and backward from the internal urethral orifice, and two passing out laterally. In this way the orifice was enlarged sufficiently to admit the index finger into the urethra. The functional result was excellent. The author considers that the condition was the result of a degeneration of the prostate, of the nature of a sclerosis, having rendered the neck of the bladder and the orifice inextensible through the loss of their normal elasticity. In this way the pouch formed at the base of the bladder, and gradually increased in depth. The case is further interesting on account of the deceptive appearance on cystoscopic examination, and in view of the successful result following division of the fibrous band which constituted the obstruction to the outflow.

The Surgical Treatment of Winged Scapula.

A new operative procedure for correcting the deformity and improving the functional disability resulting from winged scapula is described by Duval (*Rev. de chir.*, Paris, 1905, tome xxxi. p. 1). The condition is due to paralysis of the serratus magnus and trapezius muscles, and when medical measures fail to restore the functions of these muscles, steps may be taken so to fix the scapula that the usefulness of the arm may be improved. Eiselsberg has attempted to accomplish this by suturing together the inferior angles of the two scapulæ, but the result was that the scapulæ became so tilted that they lay horizontally, and the result was defective. In a second case, he brought together the superior vertebral angles, but this braced back the shoulders to such an extent that the clavicle pressed the vessels and nerves of the axilla against the first rib, and it became necessary to elongate the clavicle. Duval points out that these operations are not physiological, as they abolish the normal rotation of the scapula on the chest around the pivot formed by the supero-internal angle. To re-establish the normal condition, it is necessary to apply the scapula to the chest wall in such a way as to conserve its power of rotation. Theoretically, this would best be done by grafting certain of the muscles of the back into the vertebral border of the scapula, but practically these transplanted muscles are not alone strong enough for the purpose. The operation which Duval has devised and carried out on three patients, consists in suturing the lower third of the vertebral border of the scapula to the sixth and seventh ribs. In the author's experience the union is effected by strong fibrous callus, which admits of a certain mobility of the lower angle of the scapula, and does not entirely abolish the rotation of the bone. At the same time it furnishes a *point d'appui*, and the range of movement of the upper arm, particularly in the direction of abduction, is considerably increased. The control of the scapula is augmented by grafting some fibres of the erector spinæ muscle into the vertebral border of the scapula. Briefly, the technique of the operation is as follows: The scapula is placed in its normal position, and an incision carried along its vertebral border from the root of the spine to the inferior angle. The muscles are separated from the vertebral border, and the periosteum along with the infraspinatus muscle raised from the outer surface of the bone for a distance of 1 cm. The periosteum and fibres of insertion of the serratus magnus are similarly raised from off the ventral aspect, and to admit of the rawed bone being brought against the ribs, the raised tissues on the ventral aspect are resected. At a distance of about 7 cms. from the middle line, the sixth and seventh ribs are denuded for about 1½ cm. The scapula is then fixed to the denuded ribs by means of silver wire sutures, which transfix the vertebral border of the scapula and encircle the ribs. The periosteum is sutured over the wire. The adjacent portions of the longitudinal muscles of the back are separated and sutured to the periosteum and supra-spinatus muscle at the upper angle of the scapula. The wound is then closed without drainage. The results in the author's three cases show one complete success, one marked amelioration of the symptoms, and one failure. All the patients were only operated on on one side.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF

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The Serum Treatment of Puerperal Fever.

Peham (*Arch. f. Gynaek.*, Berlin, 1904, Bd. lxxiv. Heft 1) reports on forty-four cases of puerperal fever so treated. The chief points brought out in the report are the importance of early administration and large doses. In advanced cases the results are always unsatisfactory, and the serum has little effect in preventing the spread of suppurative processes. In cases not due to streptococcic infection, no harm results from the serum.

Intraperitoneal Hæmorrhage from an Unusual Cause.

Bender (*Bull. et Mém. de la Soc. Anat. de Paris*, 1904, July) reports the following case of internal hæmorrhage from the rupture of a hæmorrhagic ovarian cyst. P., æt. 26, had all the signs of internal hæmorrhage. The symptoms appeared suddenly thirty-six hours before admission to hospital. From the history of delayed menstruation the case was regarded as one of ruptured tubal pregnancy. A litre and a half of blood was removed from the abdomen, along with the left appendages, where a considerable amount of blood clot pointed to a possible lesion of the tubes. The right appendages were left. Nothing abnormal could be found in the appendages removed, but a small ovarian cyst, thin-walled and ruptured, was discovered. There was nothing pointing to tubal pregnancy.

TORSION OF A FIBROID UTERUS.

FERRY (*Bull. et Mém. de la Soc. Anat. de Paris*, 1904, May) reports the following example of this rare condition. P., æt. 49, complained of recurrent attacks of abdominal pain with dysuria, and was known to have had an abdominal tumour for some years. Operation showed a pedicle growing from the fundus of the uterus, which had twisted, and by so doing had involved the uterus, so that the left appendages were rotated to the right and the right to the left side. There were signs of peritonitis. The uterine torsion was undone on removing the tumour with its pedicle.

TUBAL PREGNANCY ASSOCIATED WITH PYOSALPINX.

HITSCHMANN (*Ztschr. f. Geburtsh. u. Gynaek.*, Stuttgart, Bd. liii. Heft 1) reports the following case, of interest in so far as the occurrence of the above conditions in the same tube must be of the greatest rarity. P., æt. 28, 4-para; missed two menstrual periods; symptoms of internal hæmorrhage. At the operation the right tube was enlarged to the size of a cherry, where a perforation was detected. On microscopic examination, the uterine end of the tube showed well-marked purulent salpingitis, probably the result of an ascending gonorrhœa. This had caused occlusion of the tube, and thereby prevented the descent of the fertilised ovum from the fimbriated end of the tube into the uterine cavity.

PELVIC DERMOID TUMOUR SIMULATING TUBAL PREGNANCY.

GRADENWITZ (*Monatschr. f. Geburtsh. u. Gynaek.*, Berlin, 1904, August) reports the following case:—Multipara; complained of sacral pain, with occasional fainting attacks, after seven weeks' amenorrhœa. The breasts contained milk. The uterus was enlarged, and a tumour the size of a lemon occupied Douglas's pouch. Tubal pregnancy being suspected, posterior colpotomy was performed, and the tumour removed. On opening it, it was found to contain hair. No blood escaped from the peritoneal cavity. The appendages were found normal. The symptoms have been caused by the twisting of the pedicle near the uterus.

SYPHILIS AND NURSING.

QUEIREL (*Ann. de Gynec. et d'Obst.*, Paris, 1904, November) discusses the question of infection of wet nurses by syphilitic infants. He considers the occurrence of repeated premature confinements sufficiently suspicious to prevent them being put under the care of a wet nurse.

He states that in recent syphilis the placenta may be small, but in old-standing cases it is often large, and in such the disused structure may be a valuable indicator of the grave complication which might not otherwise be detected.

THERAPEUTICS.

UNDER THE CHARGE OF
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The Treatment of Leukæmia with Röntgen Rays.

The number of cases of leukæmia which have been treated with the Röntgen rays is steadily increasing. In the *München. med. Wchnschr.*, 1905, January 24, four articles dealing with the question appear.

Meyer and Eisenreich report two cases of splenic leukæmia which were distinctly improved under the raying. The spleen and extremities of the bones were exposed to the rays. As a rule, the exposure lasted from eight to ten minutes daily. In both cases subjective improvement appeared early. The general condition became better, temperature fell, body weight increased, while the hæmoglobin rose. Both patients were able to resume their work. The leucocytes diminished greatly; in the one case the leukæmic nature of the blood entirely disappeared for a time, but returned slightly. In this case also the spleen contracted considerably, but in the second case, though the blood and general condition markedly improved, the spleen did not appreciably alter in size.

Wendel puts on record a case of chronic leukæmia of moderate severity. The spleen was enlarged, while the blood examination showed 56,000 leucocytes. The spleen was exposed alone at first, but after twenty-one exposures no improvement in the blood was noted, though the general condition had improved, and the spleen was somewhat softer and smaller. At this stage the sternum was also exposed, and from this date the leucocytes began to diminish, falling to 16,000, and the erythrocytes to increase. The spleen, which at first extended 15 cms. below the costal margin, shrunk, so that it only reached 5 cms. below the ribs. On stopping the treatment the patient began to relapse, so that at the end of three months the leucocytes had risen to 46,000, and the spleen had increased in size and protruded 20 cms. below the ribs; but this has improved under renewed treatment. Wendel has been able to collect thirty-nine cases from the journals. Of these, in thirty-five cases improvement was obtained. In two cases the treatment had no effect, while in the remaining two cases the diseased condition became more manifest despite treatment.

Schieffer reports, in addition to these thirty-nine cases, five new cases of his own. One of these only remained under treatment for a short time, but of the other four cases (all examples of myelogenous leukæmia) the results were extremely satisfactory, so that in two of them a definite cure seems to have been obtained. The remaining case was not so satisfactory. The patient was admitted in a very serious state, suffering from œdema of the legs, diarrhœa, fainting attacks, hæmorrhages, and great loss of strength. The liver and spleen were both enlarged, the latter reaching to within two fingers'-breadth of Poupart's ligament. The blood contained 345,000 leucocytes per c.mm. Despite this serious condition, the raying was attended by marked improvement. The spleen became smaller, œdema disappeared, the bleed ings ceased, while the weight increased. After thirty-one exposures the condition was as follows:—The spleen only protruded 1½ in. under the margin of the ribs; the patient had gained 2 kgrms. in weight; the temperature was normal; the blood contained in a c.mm. 3,400,000 reds, 70,000 whites, while the Hb was 70 per cent. The general condition was so good that the patient insisted on going home, yet in fourteen days he was dead. On ceasing treatment, the spleen and liver rapidly increased in size, the temperature rose to 103° or 104°, and there was great loss of strength, and dyspnœa and death occurred with symptoms of collapse.

In contradistinction to the majority of other clinicians, Schieffer only rays the spleen and does not expose the bones.

All the observers found that dermatitis was produced despite every precaution. This does not, however, seem to hinder the improvement even though the rays are stopped entirely for a time. Little discomfort or unpleasant effects are otherwise noted. In one case, however, the hair of the beard and moustache are stated to have fallen out; and in other instances pain in the spleen and palpitation were noted.

As regards technique, it is well to employ a fairly hard tube, as the rays from it are of greater penetrating power and less apt to produce dermatitis. The apparatus is arranged so that the antikathode is about 25 to 30 cms. from the part to be rayed. Each exposure lasts from five to eight to ten minutes. The neighbouring parts are protected with lead. The spleen may be rayed both from the back and front. Winkler, in discussing the technique of Röntgen treatment, recommends that the parts should be rayed in regular rotation, and the interval between the re-exposure of any given area should be as long as possible, say fourteen days. In most cases the cases remained under treatment for three or four months.

The Influence of Suprarenal Extract on Absorption and Transudation.

If a solution of adrenalin and strychnine are mixed together in a syringe before injecting them into a frog, the production of the resulting tetanus is distinctly retarded. The same effect is produced if the two substances are injected separately into the same place; but if the two substances are injected separately into different localities, no delay takes place. To solve the problem of the nature of this action, Meltzer and

Auer have performed an interesting series of experiments on rabbits. They found that in rabbits the intravenous injection of a comparatively moderate dose of adrenalin is capable of either completely overcoming or distinctly delaying and greatly mitigating the effects of a surely fatal dose of strychnine. The action of intravenous injections is more distinct than that of hypodermic or intraperitoneal injection. To enable them to make more accurate observations, further experiments were made with fluorescein, an innocuous substance, which stains the fluids and tissues of the body and is readily detected. They found that the previous administration of suprarenal extract, given either subcutaneously or intravenously, retards the appearance and reduces the intensity of the effects of a subsequent subcutaneous injection of fluorescein. By a further series of experiments, they were able to show that the intravenous injection of suprarenal extract retards in a greater or less extent the absorption into the blood of fluorescein administered subcutaneously. On the other hand, the disappearance of the fluorescein from the blood was also delayed in the adrenalin animal as contrasted with the control animal. Thus absorption from the tissues, and transudation from the blood into the tissues, are both delayed by suprarenal extract. It is probable that this is due to an action on the endothelial wall of capillaries and lymphatics whereby the tonicity of the endothelial protoplasm is increased. This increase in tonicity narrows the lumen of the pores in the endothelium, and thus decreases the interchange between the blood and tissue fluid (lymph). In other words, the vital permeability of the capillary wall is diminished, hence the retardation of absorption and transudation.—*Am. Journ. Med. Sc.*, Phila., 1905, January.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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On a Parasite found in Persons suffering from Enlargement of the Spleen in India.

Christophers has written a second report ("Scient. Memoirs Indian Med. and Sanit. Departments," Calcutta, 1904) on this parasite. A short notice of his first report was given in these Abstracts at the time of publication, and since then the parasite was again referred to in the September Abstract of Schaudinn's remarkable monograph, in which it was stated that the Tropical Section of the British Medical Association at Oxford had supported Leishman's (its discoverer) view that this new parasite was really a trypanosome. Christophers, however, in this second report does not accept this view. He reviews his cases, and finds that certain constant pathological changes are associated with infection by the parasite. The post-mortem changes are enlargement of the spleen and liver, extensive multiple ulcers of the large intestine and rarely of the small. The changes in the liver and spleen are almost pathognomonic. The spleen has a peculiar smooth, firm, and solid look. The substance is dark red, granular, and homogeneous, and its consistence firm but friable. The liver is firm, friable, and mottled. A white tissue occupies the centre of the lobules, which on microscopic examination is seen to be a new deposit formed of large endothelial cells containing the parasites. The intestinal ulcers are deep and sloughy and tend to perforate, and fungating granulation tissue is seen in association therewith. The parasites are found in immense numbers in the cells of the liver, spleen, bone marrow, granulation tissue in the intestine and in the skin, and in a lymphatic gland, which drained a skin lesion. They were not found in a lymphatic gland draining only normal skin. They are generally present in fair numbers in the lungs and testes, also in the blood of large veins, lying in various types of cells. They may be found in leucocytes in the peripheral blood, but are not found free therein or within the red cells. There are certain constant changes recognisable during life which make the disease easy of recognition. They are—(1) The splenic enlargement, (2) emaciation, (3) an irregular high temperature, (4) intestinal ulceration, (5) a tendency to noma and local gangrenes, (6) papular eruptions and ulceration of the skin, (7) hæmorrhages, (8) leucopenia. *The nature of the infective process.*—The parasites are always found in the cytoplasm of cells, leucocytes or endothelial, and never free in the blood except that drawn from puncture of the spleen. In this case they are probably set free by the destruction of the cells. They are never seen inside the red cells, and further differ from the malarial parasite in inclusion within the cytoplasm of the cell, not being prefaced or followed by destruction of the parasite. It probably multiplies by fission normally within the cells of its host. The disease shows two distinct types—(1) A granulomatous type, the local lesion breaking down and forming an ulcer, the tropical ulcer; (2) a septicæmic type, the so-called malarial cachexia of India, in which the cachexia is essentially a chronic infection of the vascular endothelium. Comparison was made between the new parasite and a trypanosome infection, the trypanosome which occurs naturally in the pariah dogs of Madras. The enlargement of the spleen was much less in the trypanosome infection, and while the trypanosomata were abundant in the peripheral blood they were rare in the spleen. There was no storing up in the cells of the spleen such as occurs and is so striking a feature of the new parasite. In short, such resemblances as were detected between the two diseases were evidently superficial only.

THE TRYPANOSOMA.

NOY and M'Neal first published a note upon the culture of the *Trypanosoma Lewisi*, and suggested that their method should be applied to other forms. This has been done by Rabinowitsch and Kempner, and more recently by themselves (*Journ. Infect. Dis.*, Chicago, 1904, vol. i. p. 1). They here give the details of their studies in the culture of *Trypanosoma Brucei*. It is more delicate and more difficult to cultivate than the *T. Lewisi.* The chief difficulty is in obtaining the initial culture. Out of fifty trials only four were successful. One of these cultures was kept alive for one hundred days by means of eight subcultures. The medium used was ordinary agar, to which variable quantities of rabbit's blood was added. Cultures did better in wider and larger tubes, probably because of the better supply of oxygen. The inoculation from the blood, made either with a pipette or a platinum loop, must not be delayed too long after the death of the animal, and must be placed in an incubator at 25° C. By using a medium containing 50 per cent. or even less of blood, they separated the two trypanosomes *Lewisi* and *Brucei* when they existed together in the blood of an animal, the former outgrowing the latter. The virulence of young cultures of the *T. Brucei* is as great as that of the blood of animals suffering from nagana. Age and a temperature of 34° C. diminish the virulence. It is suggested that immunity may be got by the repeated injection of such attenuated cultures. If these results be corroborated and be capable of extension to other varieties, they may lead to valuable therapeutic measures. The action of blood serum upon the *T. Gambiense* has been studied by A. Laveran (*Compt. rend. Acad. d. Sc.*, Paris, 1904, February 22). Human blood serum given to animals infected by the *T. Gambiense* does no good, because man possesses no natural immunity against this trypanosome, but it has an evident action upon the trypanosoma of horses of the Gambia. This latter protozoon is distinguished from the *T. Gambiense* by certain morphological characters. He also found that arsenic in large doses caused the disappearance of the parasite from the blood of infected animals. Broden has noted (*Bull. Soc. d'études colonnales*, Bruxelles, 1904, February), in a paper of some twenty-eight pages, the occurrence of three cases of sleeping sickness in Europeans. He contrasts the parasite in the European, the African native, the ox, the sheep, and the ass, and gives the results of his inoculations of the blood of infected animals to other species. He considers that the identity of some at least of these trypanosomes, notably that of the ox and sheep, has not been proved.

"Trypanosomes and Trypanosomiasis" is the title of a book of some 400 pages written by Laveran and Mesnil, and published by Masson & Co., Paris, 1904, which is the first systematic text-book published on this subject. It treats in turn of the history of the subject, its technique, and the natural history of trypanosomes. The trypanosome of the rat is given as the type. The diseases due to it follow, *e.g.*, nagana and similar African maladies, surra, Caderas disease, and other equine maladies. Human trypanosomiasis (sleeping sickness) completes the list. A short review of the trypanosomes of other vertebrates is given, and also an account of the tsetse fly. The book is noticed here as it forms a useful introduction to the subject, and enables the newer articles referred to in these pages to be better understood by the reader.

A Leprosy-like Disease of the Rat.

Dean (*Journ. Hyg.*, Cambridge, No. 1, 1905, January) records the results of certain observations on a disease of the rat, which is chiefly interesting from its close resemblance to human leprosy. The lesions are similar both macroscopically and microscopically, and the causal bacillus closely resembles the *Bacillus lepræ* in its morphological characters, distribution in the tissues, staining reactions, and refusal to adopt a saprophytic habit of life. It is not yet known if the rat can be inoculated with human leprosy, and it is not contended by the author that this leprosy-like disease in the rat is the same as leprosy in the human subject, but it is sufficiently like it to arouse much interest in it. Although the acid-fast bacillus found in the tissues could not be cultivated, a diphtheroid bacillus was isolated and cultivated from two cases of the disease, but all attempts to convert this into an acid-fast form were unsuccessful. The bacillus was agglutinated by the serum of a leprous patient, but the observations on this point were of too preliminary a nature to allow of any definite conclusions. The disease could be transmitted by inoculation to other rats, but not to rabbits, guinea-pigs, mice, or a monkey. If the inoculated rats do not succumb to intercurrent disease, they develop the characteristic lesions of the disease, which runs a very slow course, extending even to about a year.

AGGLUTINATION OF THE ANTHRAX BACILLUS.

CARINI (*Deutsche med. Wchnschr.*, Leipzig, 1904, August 11) and Sobernhein (*ibid.*, 1904, October 6) both performed a number of experiments with the serum of immunised animals (assimmunised by intravenous injections, etc.) and with non-specific serums, and the general conclusions they both came to, support the extreme variability of the behaviour of the anthrax bacillus, not only to specific but also to other serums. Agglutination sometimes follows in both cases, but usually does not.

ACUTE ARTICULAR RHEUMATISM IN CHILDREN.

BAGINSKY (*Berl. klin. Wchnschr.*, 1904, Bd. xli., November 21–28) does not believe that the blood is altered nor that chorea is always rheumatic. He thinks there are two main groups of chorea, the rheumatic and the nervous. The distinguishing feature of acute rheumatism in children is the early and almost inevitable involvement of the heart. All except seven out of the seventy-six cases in his experience showed evidences of a likely irritation or inflammation of the heart. In seventeen of them the heart entirely recovered. The proportion of cases with intact heart was 12 per cent., of complete recovery 23 per cent., of permanent heart defects 62 per cent., and of deaths 9·9 per cent. The commonest lesion is fibrinous pericarditis with adhesions.

RELATIONS BETWEEN TONSILLITIS AND ACUTE ARTICULAR RHEUMATISM.

GÜRICH (*München. med. Wchnschr.*, 1904, Bd. li., November 22) noted evidence of tonsillitis in thirteen out of seventeen cases of acute rheumatism. The special form of tonsillitis was always the chronic desquamating inflammation, with the yellowish-white bad-smelling "tonsil plugs" which form in the follicles. He thinks acute rheumatism may be prevented in such cases by excising and cauterising the follicles and eventually excising part or the whole of the tonsil. He thinks that the virus of acute rheumatism first causes an acute tonsillitis, then later, along with other agents, a chronic tonsillitis which harbours the rheumatic virus and enables it to enter the body during an exacerbation of the chronic tonsillar disease.

EXPERIMENTAL ARTHRITIS AND ENDOCARDITIS PRODUCED BY A STREPTOCOCCUS ISOLATED FROM THE BLOOD OF A CASE OF RHEUMATISM, ENDOCARDITIS, AND CHOREA.

MORRIS and Lancope (*Am. Journ. Med. Sc.*, Phila., 1904, vol. lxxviii. p. 601) isolated this streptococcus from the blood of the patient just before death, and injected it into the vein of the ear of a rabbit, and reproduced in it the characteristic and arthritic lesions of acute rheumatism. They considered that it was the same streptococcus as that described by Wasserman, Meyer, Poynton and Paine, and Walker, who all consider it to be the cause of rheumatic fever.

PHYSIOLOGY.

UNDER THE CHARGE OF

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SUGAR FORMATION FROM PROTEID.

WITHIN recent times this subject has again been investigated by workers, who have taken every precaution that has seemed to them necessary to arrive at definite conclusions on this most important matter. Of these workers perhaps the two most important are Lüthje and Pflüger, and as both have recognised that the experimental form of glycosuria which lends itself most to the elucidation of this problem is that resulting from extirpation of the pancreas, they have very carefully investigated the metabolic changes which take place in this condition. Just as in recent times in the case of thyroidectomy great stress has been laid upon the operative procedure, so in this case of pancreas extirpation both observers have, by enlisting the services of surgeons, done all in their power to remove any fallacies that might arise in drawing conclusions from disorders of metabolism possibly due to some other factor than the removal of the pancreas. Pflüger during recent years has gone very fully into the older work, and has shown that there are very few absolutely reliable data proving the formation of glucose from proteid in the organism of the diabetic individual. Lüthje also has carefully analysed the older literature, and has found that when one takes Pflüger's maximal number representing the amount of glycogen in the body before operation as 40 grms. per kilo, there is only a single case where one requires to go beyond the carbohydrate source in the organism to explain the increase in glucose excretion. Even in this case there is the possibility that the amount of sugar excreted beyond that which could be derived from carbohydrate in the body might have been derived from fat. Lüthje in his last paper (*Arch. f. d. ges. Physiol.*, Bonn, Bd. cvi. S. 160) pays very special attention to Pflüger's criticism, and, taking the latter's glycogen factor (40 grms. per kilo) as his working basis, shows that the sugar excretion in a dog after pancreas removal is too great to be accounted for by the carbohydrate given in the diet and that present in the organism before the extirpation.

Pflüger in a short article following Lüthje's one, agrees with the latter that the glucose excretion cannot be accounted for by the carbohydrate in the body before the pancreas removal, but inclines to the view that the fat, and not the proteid, is the source of this excess glucose. He adduces the following reasons:—Although it is well recognised that a proteid diet often causes a rise in the glucose excretion of the diabetic patient, it is often forgotten that on a mixed diet every increase in the proteid occasions a corresponding saving in fat and carbohydrate. Thus when, as in the diabetic patient, the oxidation of the glucose is already markedly decreased, the addition of any substance which spares still further the carbohydrate will cause a marked rise in the excretion of the latter. That proteid may act in this way requires to be kept in view, and special attention should be paid to any substances other than proteid which may act as glucose sparers, rather than as the direct sources of the carbohydrate. Pflüger draws attention to the interesting work of Salomon and Emden (*Ztschr. f. d. ges. Biochemie*, Bde. v. and vi.) on the action of amino-acids after removal of the pancreas. They showed most distinctly that such bodies as alanin, asparagin, and glycocoll produce as marked a rise in the glucose excretion as proteid. It is most probable that these act simply as glucose sparers. On the other hand, such derivatives of proteid metabolism as urea, which cannot act in this way, never produce a rise in glucose excretion, although they may give rise to polyuria. It is very unlikely that even glycocoll acts directly as a source of glucose. It is more likely that these acids act as ammonium carbonate does in causing a rise in the amount of glycogen stored in the liver. Rumpf has shown that in the dog large amounts of glucose may be excreted for long periods when phloridzin is given on a diet with a minimum of proteid and a maximum of fat. The quantity of glucose excreted cannot be accounted for by the proteid used up. The same writer has shown that in many severe cases of diabetes, there is no rise in the nitrogen excretion. In the most recent number of the *Arch. f. d. ges. Physiol.*, Bonn, Professor Witzel, the well-known surgeon, gives a detailed description of the technique of total pancreas removal in the dog. After death, the most careful examination by Nussbaum was unable to discover the smallest trace of pancreas left behind. After the pancreas was removed, Pflüger carried out the analyses of the urine. He was desirous of finding out whether it was possible, after the most careful total pancreas extirpation, to prevent the occurrence of glycosuria. Lüthje referred to the glycosuria produced by careful total pancreas extirpation as intermittent, periods of disappearance of glucose from the urine succeeding glycosuria. Thirteen total extirpations were carried out by Witzel, and in all of them glycosuria of a severe type occurred. The cause of death was undoubtedly the delay in the healing of the wounds due to the great increase in the sugar percentage of the circulating fluids, suppuration occurring at various sites.

Carl Neuberg (*Arch. f. Physiol. Verhandl. d. Berl. physiol. Gesellsch*, March 1904) describes shortly the changes which glycerose, obtained by oxidation from glycerin, undergoes in the organism of the normal and diabetic individual. The special interest of the work lies in the fact that glycerose was the substance from which Emil Fischer synthetically built up the glucoses. It is completely oxidised in the tissues of man, dog, and rabbit, even when very large doses are taken. In fact, it is much more assimilable than any artificially prepared sugar, and even than most natural sugars. A most interesting point which Neuberg discovered was that glycerose could be completely oxidised by the diabetic patient and also by dogs after pancreas removal.

Thyroid and Parathyroid Glands.

Swale Vincent and Jolly (*Journ. Physiol.*, Cambridge and London, vol. xxxii. p. 65) have investigated the effects of complete and partial removal of thyroid and parathyroids in a large number of different animals, and have obtained results which differ from those published by other workers. They draw attention to the intimate connection between thyroids and parathyroids, in many cases the latter being embedded in the former. Thus the entire removal of the parathyroids is in all cases difficult, in many impossible. They experimented on cats, dogs, foxes, rats, guinea-pigs, rabbits, and monkeys. They shortly summarise their results as follows:—(1) It cannot be truly said that either thyroids or parathyroids are essential for life, since it is frequently possible to remove either or both without causing death. (2) Fatal results are not due to injuries to surrounding structures accompanying the surgical interference, but must be referred to absence of the glands in question. (3) Rats and guinea-pigs do not seem to suffer at all as the result of extirpation. Monkeys only show transient nervous symptoms. Dogs and cats frequently, but by no means invariably, suffer severely and die. In foxes, symptoms come on with very remarkable rapidity, and death is correspondingly early. (4) The diversity of results obtained in different classes of animals is not to be attributed to anatomical, but to physiological differences. (5) In no animal were symptoms produced resembling those of myxœdema. (6) In young animals, although extirpation of the thyroid causes a temporary cessation of growth, this is not necessarily accompanied by symptoms of a cretinoid nature. (7) Myxœdema and cretinism must be due to causes more complex than simple thyroid insufficiency. (8) When the thyroid is removed, the parathyroids appear capable of functionally replacing it to a certain extent, and their histological structure changes accordingly.

DISEASES OF THE EYE.

UNDER THE CHARGE OF
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Ocular Traumatic Hysteria.

The subject of the medico-legal results of injuries to the eye is one of much difficulty from many different points of view, even when the case is a perfectly straightforward one; but where, after an injury to the eye, symptoms arise which are almost certainly in part "hysterical," and perhaps may be entirely so, the uncertainties become greater still. Very likely we do not see so much of hysteria in the male in this country as our colleagues may do who practise in some others; but at all events we have to be constantly on the watch lest, in these days of workmen's compensation, we may be misled by an assumed train of symptoms on the one hand, or may regard too lightly a real pathological state on the other. But, apart from all pecuniary matters, one sees from time to time strange and exceptional mental symptoms resulting from an injury, which, for want of a better term, one may call "hysterical," which persist for long periods, which are quite exceptional in that the accident which gives rise to them does not similarly upset a dozen or fifty other persons on whom also it has acted, and which occur, it may be, in a person in whose case there is no question of a claim for compensation. Under other conditions, such symptoms would be looked upon with considerable suspicion. A singular circumstance in regard to a number of these cases of traumatic hysteria is the very slight, perhaps even trifling, character of the original injury which has given rise to them. Teillais (Nantes) records two such cases at some length. The first occurred in the person of a man of 32, a printer by trade, who accidentally received a slight blow from a falling piece of furniture; the skin of the left side of the forehead and upper lid was slightly lacerated. No indication of bad vision was present for a week after the accident, but by that time his left eye became so far amblyopic that he was unable to read with it, and had he not had a good right eye he would have been compelled to leave off work. Three weeks after the accident, the right eye was seriously failing also, however, and he had to stop work. At this time he was noticed to be somewhat unhinged in respect of mental balance: he had a great nervous dread of blindness coming on, and this dread deprived him to a considerable extent of rest and sleep. The patient was given to intoxication at times; he had suffered from intestinal worms, and, in connection with his work, had had some symptoms of lead poisoning, particularly colic. At the date of examination he could read large print with the right eye, but had only perception of light with the other. At the same time, the ophthalmoscope gave a negative result, for the fundus was quite normal in each eye. The pupils acted well too, but the fields of vision were greatly contracted, and colour vision was reduced to perception of red and blue. Most likely a "hysterical" field could have been demonstrated by means of the perimeter, but the notes on this question are not very copious. A point is noted, however, which is decidedly suggestive, namely, that there was some anæsthesia of the conjunctiva and cornea; this is quite a frequent symptom in hysterical patients. Without undue detail in the relation of the case, one can only say that the patient remained in practically the same state for a year, when quite suddenly vision began to return, imperfectly at first, but more completely after a time; the cutaneous and conjunctival anæsthesia also passed off. In this case the effect of the alcohol was probably simply that, by lowering nerve resistance, it induced increased liability to the hysterical condition.

Teillais' second case was that of a boy of 15, who received a blow upon the right eye of no serious character. Vision after it was quite normal, and the boy went back to school; but about two months later he suddenly became "blind," though there was not the smallest trace of any pathological condition visible. Vision, however, was reduced to bare perception of light; there was some paralysis, both sensory and motor, of the right leg, and anæsthesia of the cornea and conjunctiva. In three months, after the failure of all treatment, he suddenly announced that he could see, and on investigation he was found to have good vision, even if the field was a little restricted; sensation had also returned. The only point of any apparent moment in the lad's history was that he had had typhoid fever: some authorities consider this to be a potent cause of hysteria, and Teillais seems to agree with them. Had there been any medico-legal questions involved in these two cases, there would have been considerable risk of this neurosis being regarded as mere shamming.—*Arch. d'Opht.*, 1904, Paris, tome viii.

Binocular Vision in the Lower Animals.

In a recent number of *Brain*, Wilfrid Harris discusses this matter in connection with some investigations upon other points which he has been carrying out. In all the fishes, amphibians, reptiles, and birds, the decussation at the chiasma is complete, and yet among these animals there are some which certainly appear to be possessed of binocular vision. Harris thinks that binocular vision is specially connected with carnivorous habits; it is present to a moderate degree among such carnivorous fishes as the shark and ray, and among birds in the hawk, owl, vulture, certain gulls, etc. Among the mammalia, binocular vision is chiefly developed in the carnivora and the primates: it may be that its more perfect development among these last is also related to the higher education of the hand as a prehensile organ. It is plain that in those animals in which there is binocular vision, but complete decussation of the optic nerves (those inferior to the mammals), there cannot be stereoscopic vision in the sense in which we possess it, even if there be binocular vision. Convergence in the act of feeding is, however, to be clearly made out in the case, for example, of the owl. Where the eyes are laterally placed, the movements of the two are by no means necessarily conjugate; strict conjugation seems to be associated with the development of binocular stereoscopic vision.

A point of some interest is connected with the light-reflex of the pupil. In the amphibians and the birds, whether these happen to be possessed of binocular vision or not, reflex contraction of the pupil is limited to the eye stimulated. In the rabbit, in which there is hardly any binocular vision, if there is any at all, and in which decussation is complete, only the pupil of the stimulated eye contracts. In the cat, and in all the higher mammals in which there is good binocular vision and semi-decussation, there is consensual pupil contraction, which is thus seen to depend, not upon the possession of binocular vision alone, but upon semi-decussation.—*Brain*, London, vol. xxvii. p. 105.

REPORTS OF THE MEDICAL SOCIETIES.

Edinburgh Medico-Chirurgical Society. — *February* 1, 1905.—Professor Chiene, C.B., President, in the chair.—Mr. Dowden read a paper on "Recurring Torsion of the Spermatic Cord." This torsion is predisposed to by an arrangement of the tunica vaginalis, whereby the testicle and part of the cord are surrounded by the visceral layer, and hang free in the tunica vaginalis. The exciting causes are uncertain. Strain and sudden exertion bring it on. Many cases occur during the night, the patient being wakened from sleep by the pain. Probably several causes combine to produce the torsion. The symptoms occur suddenly: there is sickening local pain, great tenderness, vomiting, and collapse. There is also a slight elevation of temperature. Then, later, swelling of the testicle occurs. If the torsion become undone, there is sudden relief of the symptoms. The condition is to be diagnosed chiefly from epididymo-orchitis and from strangulated hernia. The twist is usually from without inwards. There is a tendency to fibrosis and atrophy even from one severe attack or from repeated mild attacks. The treatment consists in undoing the torsion and fixing the testicle by stitches.—Dr. R. A. Fleming read a paper entitled "Massage, Passive Movements, and Modified Resisted Exercises in the Treatment of Advanced Cardiac Dilatation." He first discussed the *modus operandi* of the treatment. Benefit results probably from the cardiac muscle being braced up much in the same way as any muscle is improved by careful exercise. Extreme degrees of dilatation are very much benefited by this line of treatment. It is not of much use in cases of cardiac enlargement due to arterio-sclerosis. Recognition of improvement may be based on the lessening of the area of cardiac dulness, the improved position of the apex beat, and principally on the improvement of the general health of the patient. He had used the treatment in four cases of cardiac dilatation, in which prolonged rest and the administration of the usual cardiac tonics failed to benefit beyond a certain point. A marked improvement followed on massage and careful exercises, at first passive and then resisted. He had found by experience that cases of aortic disease do not benefit from this method of treatment.—Dr. G. A. GIBSON read a paper on "Bradycardia" (with lantern demonstration), which will appear in the Journal.

EDINBURGH OBSTETRICAL SOCIETY.—*February* 8, 1905.—Sir HALLIDAY CROOM, Vice-President, in the chair.—Dr. HAULTAIN read a paper entitled "A Clinical and Pathological Analysis of a Successive Series of One hundred and twenty Abdominal Hysterectomies for Uterine Fibromyomata." He first of all classified the clinical indications for the operations, which included bleeding, size, pressure, reflex symptoms, dysmenorrhœa, and constant pain, and then described the nature and site of the various tumours dealt with. The subtotal and "pan" methods of performing hysterectomy were compared, and some details of the operation were discussed. Dr. Haultain believed in sponges and the "through and through" abdominal suture. As regards mortality, he had one death in 105 cases done by the supravaginal method, and two deaths in fifteen cases of pan-hysterectomy. In conclusion, the relative risks and the indications for hysterectomy were considered from the following standpoints:—(1) The operation—(*a*) Is it sufficiently safe to warrant its adoption except from dire necessity? (*b*) Are there any alternative methods of treatment of equal value? (*c*) Are the remote results satisfactory? (2) The effects of fibromyomata on the individual. Are they sufficiently detrimental to the well-being of the individual to warrant such radical treatment? (3) After treatment.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—*January* 27, 1905.—Dr. J. H. NICOLL—(*a*) Gave a lantern demonstration of the steps of a new operation for the radical cure of hernia; (*b*) showed specimens, and read notes of a series of cases of hernia of the ovary—(1) ovary removed for strangulation; (2) cystic ovary from an inguinal hernia in an infant of 7 weeks; (3 and 4) normal ovaries removed from infants of 3 months and 7 weeks respectively. Those ovaries were removed on account of the difficulty of separating them from the hernial sac.—Dr. FREELAND FERGUS read a paper on "Some Practical Aspects of Bacteriological Investigations of the Conjunctiva."—Dr. INGLIS POLLOCK gave a lantern demonstration of the bacteria usually found on the conjunctiva.—Dr. WALKER DOWNIE read notes of a case of a large mucous polypus removed from the nose of an infant 8 weeks old. The polypus was first observed at the age of 2 weeks. Dr. Walker Downie also showed, in illustration of a method of removing foreign bodies from the larnyx—(*a*) A grain of oats which was impacted in the larynx of a child, from which it was removed by tracheotomy, while the child had pneumonia with a temperature of 104° F.; (*b*) a sharp piece of bone which was impacted in the subglottic region of the larnyx in a child of 8 months, removed by tracheotomy. In both cases a strip of gauze was passed from the wound through the larynx into the mouth, bringing with it the foreign body.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—*Discussion on Enteric Fever.*—Dr. A. R. FERGUSON discussed the pathogenesis of enteric fever. He said that the central zone of the disease is the lymphoid tissue in and connected with the intestinal tract. Bacilli are present early in the intestine, but disappear soon, except in the depths of the tissue, and at the necrotic margin. The severity of the disease is not in proportion to the extent of the local lesion. He then proceeded to describe how the disease spread throughout the body by way of the lymphatics and blood, and pointed out the changes that take place in the blood.—Dr. R. M. BUCHANAN described the agglutination test. He said that, in order to exclude cases that have a high agglutinative power apart from enteric, it is necessary to dilute the blood fifty times and give a time limit of two hours. By using this high dilution, a positive diagnosis can nearly always be made. The blood of an enteric patient attains the agglutinative power about the fifth or sixth day, rarely as early as the third day. —Dr. T. K. DALZIEL discussed the surgical aspects of enteric fever. He said that as soon as perforation is diagnosed, the abdomen should be opened. Local or general anæsthesia may be employed. The mortality depends on the kind of micro-organism that gets into the peritoneal cavity. The perforation is nearly always in the ileum, and near the ileo-cæcal valve. To close the perforation, a purse-string suture is passed round the orifice, and one or two additional sutures through the peritoneum. It is not necessary to excise the ulcer.—Dr. JOHN BROWNLEE spoke of abortive cases of enteric fever. He said that these cases are far from uncommon, and give the serum reaction.—Dr. MACRAE discussed the diagnosis of peritonitis in enteric fever.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.—*February* 13, 1905.—Professor MUIR, President, in the chair.—Dr. JOHN ANDERSON showed a specimen of abscess of the brain accompanied by leptomeningitis, due to the pneumococcus.—Dr. J. LINDSAY STEVEN showed a girl, æt. 2 years, suffering from enlargement of the spleen and liver, possibly splenic anæmia.—Dr. J. CRAWFORD RENTON showed or read notes of a series of cases—(*a*) A case of cholecyst-enterostomy; (*b*) cases of excision of the elbow joint to remedy the effects of fracture in the neighbourhood; (*c*) a case of Kader's gastrostomy for œsophageal stricture; (*d*) a case of laminectomy for the cure of paralysis of the legs, due to tuberculous disease of the vertebræ; (*e*) demonstration of Luy's urine segregator.—Dr. KERR LOVE and Dr. J. LEITCH described two cases of intrathoracic tumour, and showed preparations and sections of the growths.—Dr. W. S. SYME read notes of a case of "carcino-sarcoma" of the thyroid, and Dr. TAYLOR described the histological characters of the growth.—Dr. G. H. EDINGTON showed—(*a*) Specimen of ribs showing different degrees of thickening from cases of chronic empyema; (*b*) a large epulis from the upper jaw; (*c*) a mixed parotid tumour. He also showed photographs of cases of carcinoma of the mamma.—Dr. JOHN ANDERSON showed—(*a*) A sarcoma of the male breast with recurrences, (*b*) a malignant cystoma (papillomatous) of the kidney, with microscopic sections of both, as card specimens.

FORFARSHIRE MEDICAL ASSOCIATION.—*February* 2, 1905.—Dr. RORIE in the chair.—Dr. J. MACKIE WHYTE showed a man suffering from tabes dorsalis in the early stage. Periodic attacks of vomiting caused him to seek advice, when it was discovered that there were really "gastric crises."—Dr. Neave showed a case of tabes in a more advanced stage of the disease.—Dr. Foggie showed a boy, æt. 16 years, suffering from spastic paralysis. The condition was probably the result of a primary lateral sclerosis of the pyramidal tract.—Dr. Mackie Whyte exhibited the specimen of a placenta from a woman with phthisis of five years' duration, which showed numerous tubercles on the amniotic surface.—Dr. Foggie read notes of a report regarding the incidence of rickets amongst the children who had attended the Medical Out-patient Department of the Infirmary during the past year. Amongst 463 children examined, beading of the ribs was present in 75 per cent., enlargement of the wrists in 23·3 per cent. The percentage of changes in the shape of the chest and of the long bones was but small. Though rickets was thus widely spread, the type of the disease did not seem a very severe one, this being proved by the fact that "flat pelvis" is not met with to any great extent in obstetrical practice.—Dr. Rogers read notes on three cases of infective arthritis after influenza. The cases were similar in that all were influenza of the gastro-intestinal type, and several other members in the three households were affected. The first and second cases were boys who developed acute inflammation in one wrist joint six days after onset of illness, which quickly passed into suppuration. The treatment was incision, washing out the joint with 1 to 40 carbolic lotion, and dressing with double cyanide gauze. Recovery was rapid, but considerable stiffness remained in the joint for several weeks. The third case was that of a man æt. 50 years, who, on the fourth day of his illness, developed swelling and tenderness of the right wrist, which afterwards became very red and discoloured, with considerable swelling of the periarticular tissues, and showed signs of suppuration. Incision did not reveal any pus, but a lot of blackish blood-stained fluid escaped, with pieces of necrosed tissue. This was examined bacteriologically, but the result was negative. The patient made a good recovery, but very considerable stiffness remained in the joint. Dr. Rogers considered that these were two distinct forms of infective arthritis. The first variety is seen in typhoid and scarlet fevers, where a swelling of the large joints simulating acute rheumatism may take place. This condition passes off in a few days, and does not go on to suppuration. In the second variety there is implication of one joint only, which may be of four types—(*a*) Slight transient swelling and effusion; (*b*) considerable effusion, at first turbid, then may be purulent; (*c*) involvement of the periarticular tissues, with brawny swelling and reddening of the skin, suggesting suppuration; (*d*) early suppuration—a destructive arthritis. The first variety may be due to the action of the specific micro-organism. The second variety is probably due to the action of ordinary bacteria of suppuration. The prognosis depends on the type of the disease. The first three types are favourable with regard to recovery, though there may be considerable stiffness of the joint following. In the fourth type the prognosis is very unfavourable, as a great many end fatally within a short time.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL.

Patet omnibus.

THE action of the Managers of the Royal Infirmary at a recent meeting, in refusing to be represented at the conference convened by the Hospital Committee of the British Medical Association, is a characteristically Edinburgh proceeding.

The facts are simple. A great wrong is being committed which presses hardly on various classes of men. The great hospitals find that their funds are insufficient to meet the demands made upon them. The needy poor are hindered from deriving full benefit from the munificent creations devised for their assistance by pious founders by reason of the throng of applicants, many of whom have no call to expect charitable relief; last, but emphatically not least, a great profession finds its labours regarded as a mere nothing, as a service to be taken for granted, and available by well-to-do people freely and at their pleasure, without fee or reward. To meet the difficult problem thus presented, the most important medical association in the world has formed a committee, with powers, such as shall investigate the whole wide question, and, if possible, find some *modus vivendi*. Here is a sound, business-like endeavour, an endeavour which is the more likely to succeed the wider and more representative the *personnel* of those who are to make it. Very fitting indeed that the managers of the largest hospital in the kingdom should be invited to attend, by their representative, and give the experience of so vast a machine for the relief of human suffering. But the managers think otherwise. It seems that there is a motto, "Open to all," prominently placed over the entrance, which binds the management. This is good news for stray dogs and cats and millionaires. The mangy cur and the corpulent company promoter may jostle each other in the race for health. The cats may now feel that the palmy days of Egypt are back once more, when cuneiform inscriptions and the feline race were appraised at their proper value. But seriously, to take the well-known *patet omnibus* and use it as an argument against the proposal to advance with the times, to come up to the requirements of changed conditions, is Edinburgh "canniness" all over. To stand out from the work of this committee is a parochialism of which the Infirmary Managers should be heartily ashamed. Are they so humble that they think the opinion of their representative could carry no weight? Or are they so arrogant that the opinion of those outside the Scottish metropolis is of no value to them? A more likely explanation is that they are not fully conscious of the extent to which the abuse of medical charities has reached. There is this to be said in their defence, that the evil is not nearly so flagrant in Scotland as in England. *Fier comme un Ecossais* is a true French saying, and the dour independence of our people has to a large extent prevented them from being at all eager to take what they can get for nothing. Every country doctor can testify to the dislike, so frequently met with, to the idea of going into hospital, a dislike largely due to the idea of accepting charity. But the evil is there to a certain extent. Take the case of the patient recently treated in the throat department, who sent a cheque for £100 to the treasurer. A fact like this should make the management think. They may argue that so much has been gained to the institution. But that is not the point, which is, that for one flagrant instance such as this there must be dozens of minor cases, and that these dishonest ones are undermining the usefulness of an institution whose primary purpose is the relief of the sick poor. It is for that purpose that the Infirmary exists, and it is towards that end that the management is bound to direct its efforts.

To urge the claim of the profession for some consideration in this matter would be a bootless task. Nor do we propose to do so. The elemental forces work unconsciously and in silence. "Silence, the great Empire of Silence, it alone is great; all else is small." Not for us to blazon forth the worth of the profession or of its craftsmen in this city. But to one consideration we may allude. The work of the healing art goes ceaselessly on. Day and night, when need be, the great work is pursued, and the Royal Infirmary, like a great hive of industry, hums with the effort to overtake the vast daily task of the alleviation of human suffering. What if this were suddenly to cease: if the skilled workers, banded together on a vital question of principle, were to hold the healing hand? Such an event could never occur. The humanity of the profession makes that impossible. But just on that account they have a right to be considered. These men with the power that they can never exercise have a claim to be considered. That claim is one of gratitude, which they have a right to think is not only "a lively sense of favours to come." It is not meet that they should have to point out the unfitness of men to come to that institution for gratuitous treatment who are wealthier men than they can ever expect to be. It is inexpedient that the financial position of the patient should be at all a consideration in their minds. They have the right to expect that the work they do is *bonâ fide* a charitable work for those who are sick and needy, and that they shall be protected against the swindler and the thief, who, being able to indemnify them for their skill, obtains it from them under false pretences. *Patet omnibus* is a noble sentiment; "Let 'em all come!" a modern impertinence.

Fourth Centenary, Royal College of Surgeons, Edinburgh.

THE Barber Surgeons of Edinburgh were incorporated by the "Seal of Cause" of the Provost, Baillies, and Council of the Burgh, on the 1st July 1505, and in the following year they received the Royal Charter of King James the Fourth. The College of Surgeons of Edinburgh, therefore, ranks as the oldest surgical corporation in the United Kingdom, and the Fourth Centenary of its existence is to be celebrated on the 20th and 21st July, on which days the resident and non-resident Fellows, together with a number of distinguished guests, will meet to commemorate the interesting Anniversary.

The Festival will be inaugurated with service in the Cathedral of St. Giles. In the afternoon of the same day, Sir Patrick Heron Watson, the President of the College, will deliver an Address in the M'Ewan Hall, and confer the Honorary Fellowship upon a number of distinguished surgeons from all parts of the world. It is desired that academic dress should be worn at both of these functions. In the evening a Reception will be held in the College of Surgeons, which will undergo such transformation as will permit of the entertainment of a large company, which will include ladies. On the forenoon of the second day, opportunities will be afforded for visiting the various surgical cliniques, museums, and laboratories, and in the afternoon the College will give a Garden Party within the grounds of George Heriot's Hospital. The Centenary Banquet will be held in the evening in the Music Hall.

It is desired that the celebrations should be attended by non-resident Fellows, and, in order that arrangements may be made for their reception, it is earnestly requested that those who propose to attend should send in their names without delay to the Honorary Secretary of the Executive Committee.

Señor Manuel Garcia.

SELDOM does it fall to the lot of any man to complete his hundredth year of life. More rare still is it for such an individual to enter upon his hundred and first year vigorous alike in body and mind, and the recipient of decorations and addresses from kings and learned scientific societies throughout the world. Such, however, has been the privilege of the Spanish maestro, Señor Manuel Garcia, who was born in Madrid on 17th March 1805, seven months before Trafalgar was fought, and whose centenary has just been celebrated in London.

As a boy of seven, when Wellington and his troops were storming Ciudad Rodrigo and Badajoz, Garcia left his native land. At the age of twenty, he was singing the leading baritone rôles in Italian opera, one of his greatest successes being in the part of Figaro in *The Barber of Seville.* His career upon the operatic stage was, however, a short one, as he early retired from public singing and turned his attention instead to the training of the voice. For seventy-five years he devoted himself to this, continuing his labours up to his ninety-seventh birthday with a keenness and interest in his work such as many younger men would have failed to emulate. Of the many hundreds of pupils who have passed through his hands, the most famous was Jenny Lind, and amongst others may be mentioned Antoinette Sterling, Madame Blanche Marchesi, Charles Santley, and Miss Margaret Macintyre.

To us, however, the main point of interest in the unique career of Manuel Garcia centres in the fact that we owe to him the invention of the laryngoscope. Nearly fifty years ago, he presented to the Royal Society of London a paper dealing with the movements of the larynx, based upon an examination of that organ by means of this instrument. It must be extremely gratifying to him to have watched the development of its application to medicine and surgery, and to be conscious of the inestimable boon which his invention has been, not only to humanity as a whole, but also to the profession of which he himself has been so distinguished an ornament.

Honours have been showered upon him at this time. The King of Spain, his own sovereign, has conferred upon him the Grand Cross of the Alfonso Order; King Edward VII., the sovereign of his adopted land, with his customary graciousness, received him at Buckingham Palace, and made him an Honorary Commander of the Victorian Order; while the German Emperor bestowed upon him the Gold Medal of Merit. Among the scientific men who attended the centenary celebration—many of whom presented addresses—were representatives of laryngological societies and associations from nearly every civilised country in the world, from Spain, France, and Germany, from Austria, Hungary, and Italy, from Russia and Sweden, from Belgium, Denmark, and the Netherlands, and from the United States and Canada, while a congratulatory telegram reached him from Japan. Musicians, some of them his old pupils, and many of the musical societies, were also represented to do him honour.

His portrait, painted by Sargent, was subscribed to by his many friends and admirers, and will remain as a permanent souvenir of his long and notable career.

The Hygiene of Marriage.

It is, to say the least of it, a strange anachronism that on such a vital matter as the hygiene of marriage, considered in its widest sense, the public have always evinced a marked determination to allow no ringing up of the curtain of fact; this point of view running side by side with a sneaking desire to see the matter handled in the cloud-land of fiction. The vast importance of the subject, considered from all aspects—physiological, social, and economic—makes it necessary that such a condition of affairs should not be allowed to continue. Only the other day we came across a case, common enough, we imagine, where marriage had been entered into without the vaguest idea on the part of the child-bearer as to how conception was brought about,—the ignorance in this case, although not exactly on a par with the idea of the young that babies are found in cabbages, yet being not very far removed from that not very romantic conception. The sentiment of marriage is of the necessity of things in natural selection; but to allow any woman to enter upon a contract, the main object of which is the procreation of children, without understanding the basis on which her part of the contract is to be carried out, is not only an act of glaring stupidity, but one of a criminal nature. The literature of the subject is extensive enough, but, except in the cases of certain pseudo-scientific volumes issued from quack sources, it has never been concentrated sufficiently to enable the intelligent layman to approach the subject with any degree of confidence. The publication of Senator and Kaminer's *Health and Disease in relation to Marriage and the Married State*, in the medium of Dr. Dulberg's English translation, is therefore to be regarded as a matter of first-rate importance. The work, which is in reality of an encyclopædic nature, is already well known in Germany. Its contributors included such famed and authoritative writers as Ewald, Mendel, Moll, Gruber, Fürbringer, and Leyden; and the matters dealt with not only include such appropriate subjects as Consanguinity and Marriage, Sexual Hygiene, Menstruation, Pregnancy, Childbed, and Lactation, but deal with such important matters as the various pathological conditions of the body so far as they are affected by the marriage state. The two volumes, in fact, constitute the *vade mecum* of the marriage aspirant, for not only will he be able to learn the main principles of selection as far as they affect marriage, but he will be instructed on the main facts affecting the conduct of the marriage state and their bearings on his own health, that of his wife, and that of his children. If it were merely for the chapter on "Sexual Hygiene in Married Life," the work would be of value, for here, in simple and direct language, is discussed the whole question of the basis of procreation in its practical and physiological aspects, and from it the reader will deduce the fact that, although natural instinct may lead him far in discerning the rights and wrongs of the matter, it will have failed to teach him many things that are of import to both father and mother. The medical practitioner will also learn much which is new to him. Such subjects do not form an integral part of our systematic teaching in the schools. And more is the pity. The obstetrical teacher takes much for granted, and leaps over a long and important chapter in sexual physiology, with the result that when the medical man is faced, in practice, by a categorical demand for explanation, he is as much in the dark as the lay interrogator. On the medical man's shoulders a great responsibility is laid, which in 50 per cent. of cases he is not capable of bearing. "Let us realise," says Professor Senator, "how often necessary sanitary precautions are, through ignorance or carelessness, or for the sake of other considerations, neglected by people about to marry or already married, and we shall at once understand how it is that marriage is responsible for so much disease and misery, so much wretchedness and misfortune in this world, and also how much of it could be avoided by judicious sanitary measures!" In order to attain it, it is above all necessary that the medical profession should become familiar with all the conditions bearing on the subject, and that it should be consulted before the consummation of intended marriages, as well as during married life. There is no more appropriate person for this than the ordinary family practitioner, who knows the histories of the patients entrusted to his care, and therefore has unequalled opportunities of observing them from their childhood, and even from their birth.

The Closed Door.

As an example of the very vital questions discussed in these important volumes, let us take the one relating to the question of sexual abstinence during menstruation, and it may surprise most laymen, and the majority of practitioners, to have the authoritative statement of Professor Kossman of Berlin, that there are weighty reasons in favour of the view that the abstention is in reality not a hygienic necessity, but only a very ancient mistaken prejudice. Professor Kossman argues that the universal custom prescribed by Parsee, Mosaic, Mohammedan, and other religions was the result of a view prevalent among the ancient civilised nations, that the menstrual blood, and consequently the menstruating woman, is unclean. The most astounding notions have prevailed, and still prevail, as to the poisonous nature of the menstrual blood, all of which may be dismissed, according to this authority, as old wives' tales. In a series of weighty arguments, he proceeds to argue in favour of the abandonment of the popular conception, on biological and psychological lines. From the biological point of view, he says: "That the rut of animals corresponds to human menstruation in its main points, can no longer be denied, as was formerly done. But in animals which possess a rutting period, intercourse takes place just during such period, and in most of them during such period only, as at other times the females experience no sexual desire, and do not exercise any attraction upon the males. Even if we ignore the Darwinian theory altogether, we cannot quite conceive how an homologous process could take place in homologous organs of most living creatures naturally, and even necessarily, as a means of propagating the species, and yet that the same process should in the case of the genus homo only be unnatural and injurious. Moreover, the instinct which compels rutting animals irresistibly to copulate is almost without an exception present in women in the form of a distinctly increased sexual desire, though, like all other human instincts, it is successfully combated by various psychical and somatic inhibitory processes." Continuing the argument, Kossman proceeds to contend that those cases of sexual frigidity which often tend to disturb the reciprocal relations of husband and wife are only extra-menstrual ones, and that, when they exist, the practitioner should encourage an attempt at cohabitation during the menstrual period, giving rational advice as to the prevention of any disagreeable results following from such a procedure. It is impossible here to enter into the whole details of Professor Kossman's ingenious argument, but there can be no doubt that the whole subject must be reopened, and it is for obstetricians to analyse the arguments on both sides, and attempt, if possible, to confute a view which is supported by powerful biological, physical, and social facts.

Too Old at Forty.

SELDOM has a purely academic address, such as that delivered by Professor Osler at the recent Johns Hopkins "Commencement," created so widespread an interest. One might assume the existence of a "silly season" in American journalism, to account for the inordinate degree of excitement which it has caused, were it not that so well balanced an organ as the *Spectator* has given space to an essay on the question thus raised. Now that the real address itself is available, it is apparent that the flutter of excitement has been brought about by an exaggerated idea of the scope of Dr. Osler's desire. The address itself, *Selbstverständlich*, is definite in aim, clear in expression, and so abundant in its wit and literary grace, that to have mistaken its tenor does not at all redound to the perspicacity of Transatlantic journalism. Professor Osler, as a teacher standing at the parting of the ways, gives to teachers his idea of how their useful lives may be made yet more useful by concentration of energy, at varying stages, on varying aspects of their work. Study till 25, research until 40, profession till 60, and then retirement. Well and good, for teachers; for the rest of the working world, not so. For Science pure and simple, it may apply; for Art, for Literature, for Statecraft, it does not apply. The great names quoted by Osler, from Vesalius to Koch, are those of scientific men (yet he cannot claim Darwin, whose first great work was published by him at the age of 50); it is of interest to compare with this list the one compiled by Balfour to support the opposite contention. "Goethe," he says, "von Humboldt, Leopold Ranke, Mrs. Somerville, and Thomas Carlyle are memorable examples of those who have done excellent brain work at very advanced periods of life"; so that against the picked men of Osler—all scientists—one may place the chosen of Balfour—all great in the literary world. And for Art, who that has heard all four would prefer to hear again Kubelik and Marie Hall in preference to Joachim and Norman-Neruda? Is there anyone who would put "Rienzi" before "Parsifal"; or compare "Ernani" with "Aida"? And who that remembers the fall of Bismarck, and Tenniel's cartoon, "Dropping the Pilot," can doubt which of the two figures in that picture has done the greater service to the Fatherland—the young Kaiser, or his mighty servant the great *Reichs Kanzler?*

It comes to this: that scientific work implies creative energy, akin to that of the man of action; and he is at his best in the physical prime of life. The men of profound thought, of poetic insight—a Kant, a Hegel, a Wordsworth—seem to penetrate more deeply into the mysteries of life, to see more clearly the beatific vision, the longer they have lived. As Bacon (a case in point) puts it: "Young men are more fitted to invent than to judge, fitter for execution than for counsel, and fitter for new projects than for settled business; for the experience of age, in things that fall within the compass of it, directeth them, but in new things abuseth (deceives) them." And even the ancients of the scientific world will have an argument of their own, to advance in self-defence; for they will tell you, and prove it, that the internal carotid remains free of atheroma long after the rest of the great vessels; so that the "wisdom of age" has an anatomical basis.

ORIGINAL COMMUNICATIONS.

NOTE ON DECAPSULATION OF THE KIDNEYS

By Francis D. Boyd, M.D., F.R.C.P.Ed.

With Pathological Report. By J. M. Beattie, M.A., M.D.

(Plate XVII.)

The priority in the suggestion of the surgical treatment of nephritis may be disputed, but it is certainly since Harrison, in 1896, advocated incision of the kidneys in cases where there was evidence of increasing tension in the organs, that much attention has been given to the subject.

In America, Edebohls has been the principal advocate of decapsulation of the kidneys for chronic disease. At first, operating to correct a malposition of the kidney, Edebohls concluded that, when the malposition was accompanied by chronic inflammatory changes, decapsulation produced marked beneficial results. He advocates the view that removal of the capsule is followed by the formation, on the most extensive scale, of new vascular connections between the kidney and its fatty capsule. The removal of the inflammatory products by absorption, and the new formation of epithelium capable of carrying on the functions of secretion,—in other words, improvement and restoration of the health of the kidney,—are the direct result of this increased blood supply and improved circulation.

Edebohls has recently published the results of seventy-two cases. In these seventy-two cases, seven deaths were immediately subsequent to operation. There were twenty-two deaths which could not be directly attributed to operation, and of these, thirteen died from chronic nephritis or its complications. The remainder appeared to improve as the result of operation. Of these, nine died from other causes; three are classified as unimproved, but the patients themselves are abundantly satisfied with the results of operation. Twenty patients have experienced decided improvement, in general health and in the condition of the urine, as the result of operation. Seventeen are classified as being cured of chronic nephritis, ten being cases of chronic interstitial nephritis. In three cases the results of operation could not be ascertained. One may not always agree with the author in his diagnosis, but the results are certainly striking.

Other cases of decapsulation for nephritis are published by Primrose, Tyson, Cabot, Elliott, Lyman, Guitéras, Hanchet, Israel, Pousson, Caillé, Nydegger, Wille, and others. In these cases benefit has followed operation.

To treat chronic nephritis, interstitial or parenchymatous, by any method which will improve the circulation through the kidney, is theoretically eminently desirable. In chronic interstitial nephritis, the adhesion of the capsule of the kidney has been ascribed to an effort on the part of nature to vascularise the kidney, new vessels passing into the cortex and aiding the maintenance of the circulation through the kidney.

Will decapsulation result in improved circulation through the kidney? Edebohls contends that it will, basing his contention on the observation, that when he operated a second time on kidneys where nephropexy and partial decapsulation had previously been performed, he found extensive and very vascular adhesions, adhesions so vascular as to give very considerable difficulty from hæmorrhage at the time of the second operation.

Claude and Balthazard, Albarran and Bernard, have investigated the effects of decapsulation performed experimentally on healthy rabbits. Johnson, working with dogs, decapsulated the kidneys, and examined them histologically at varying intervals after operation. The dogs all remained healthy, a new capsule gradually formed, sometimes thinner, but more often thicker, than the original. There was sometimes an infiltration of round cells, and a proliferation of the intertubular connective tissue of the kidney, but in no case did the observer find any considerable anastomosis between the renal and perirenal vessels.

Ferrarini, on the other hand, found an abundant new vascularisation, and gives illustrations showing the connection between the vessels of the kidney on the one hand and those of the surrounding structures on the other.

Other workers, such as Hall and Herxheimer, have produced acute nephritis in animals. Decapsulation was then performed. They found that a new capsule formed, new vessels were found in the tissues surrounding the kidneys, but were separated from the cortex by the newly formed capsule. Strands of newly formed tissue passed into the cortex, and contained newly formed vessels, but these vessels were not large enough to contain elastic fibres. There was no evidence that the capillaries which passed into the cortex were more numerous than normal.

From the point of view of chronic nephritis, exception may be taken to experiments on animals, but they are of use in elucidating the changes which follow decapsulation when the kidney is acutely congested. Regeneration of the capsule is then accompanied by the formation of cellular tissues in the injured cortex, and by the spreading inwards of strands of fibrous tissue. In fact, interstitial changes are set up in the cortex. Hall and Herxheimer failed to find any new formation of vessels which could more than compensate for the interrupted normal circulation between the renal and perirenal vessels; their results are therefore at variance with those of Ferrarini and Anzilotti.

So far there are very few post-mortem results of operation on the human subject as regards the effect on the circulation of the organ.

Jewett reports a case, and states that in neither kidney was there any newly formed blood supply through adhesions. Edebohls reports a case which was examined by Larkin, and states that Larkin was able to establish clearly the existence of an abundant vascularisation of the new capsules, of direct connection between the vessels of the new capsule and those of the perinephritic fat, and of direct penetration of the newly formed vessels of the new capsule, along connective tissue paths into the substance of the kidney, thus affording corroboration of his views of a new and increased blood supply to the kidney after decapsulation.

The following case seems to throw some light upon the histological effects of decapsulation in the human subject:—

G. C., a painter, æt. 52, was admitted to the Deaconess Hospital on 24th October 1903, complaining of shortness of breath, cough, and swelling of the feet. Duration of illness, seven weeks. The family history was unimportant. The patient's surroundings at home had been comfortable, and the food good, but he had been a heavy drinker. In his work as a painter he had been continually exposed to the risks of lead-poisoning, and to variations in temperature and weather. The patient's previous health had been good. In childhood he had had scarlet fever, whooping-cough, measles, and smallpox; but since then (with the exception of winter colds) had no recollection of being ill till August 1903. In the beginning of August he took a cold, with cough and expectoration, and his ankles and feet became swollen, but after a few days' rest in bed the swelling subsided and he went to work. He worked intermittently till the beginning of October, when he began to be troubled with cough and shortness of breath. After a period of rest in bed, he was admitted to the Deaconess Hospital.

His weight on admission was 9 stone 8½ lb.; his height, 5 ft. 4 in.; his temperature, 98°; his face pale and puffy, especially under the eyes; muscularity fair. There was some slight œdema of the back, and œdema of the feet and legs.

He stated that he was making less water than before his illness, but that nevertheless he had to rise three and four times a night. The urine was dark amber; acid; the amount, 40 to 50 oz.; the specific gravity was 1015; it contained albumin, 0·45 per cent., urates and tube casts, both granular and hyaline.

Circulatory system.—There were no subjective phenomena. The apex beat was palpable in the sixth interspace, just internal to the mammary line. The cardiac pulsation was diffused, the right border of the heart was 2¼ in. to the right of the midsternum line, and the left border in the fourth interspace was just outside the mammary line. The first sound in the mitral area was impure, the second sound accentuated.

The pulse showed marked degeneration of the radial vessel, its rate 96 per minute, its pressure increased, its rhythm regular.

Hæmopoietic system.—There was no enlargement of lymphatic glands. The red blood corpuscles, 4,483,000; and white, 8000. Hæmoglobin, 66 per cent.; freezing point = 0°·61.

Respiratory system.—There was cough, abundant serous sputum; the chest was somewhat barrel-shaped; there were physical signs of bronchitis, and emphysema.

Alimentary system.—No abnormal phenomena.

Nervous system.—Some headache, otherwise normal.

Towards the end of October the patient developed effusion into both pleural cavities, with respiratory difficulties, and the right pleural cavity was tapped. Early in November some ascites developed, but under treatment the patient improved; the amount of urine increased, and the effusion into the serous cavities gradually disappeared. By the beginning of January the albumin in the urine had markedly decreased, and the patient felt so well that, at his urgent request, he was discharged.

In less than a month he was readmitted, with a recurrence of all his signs and symptoms: these improved under treatment, and he again insisted on returning to work.

He worked for a fortnight, when he again broke down, and was then admitted to the Royal Infirmary, Ward 29, under the care of Dr. Gibson. During March the patient showed no improvement; the urinary amount remained low (30 to 40 oz.), the albumin averaged 3·5 to 4·5 gr. per oz.

There was œdema of the legs, thighs, and back. There was effusion into the peritoneum and both pleural sacs, and œdema of the lungs. The right heart was dilated, and the impurity of the first sound at the apex had developed into a distinct systolic murmur. As the patient was obviously going downhill, it was decided, as a *dernier ressort*, to decapsulate the kidneys, with a view to ameliorating his condition.

Both pleural sacs were tapped.

On 6th April Mr. Cotterill operated, ether being the anæsthetic. The right kidney was exposed by a lumbar incision, partially freed and brought up into the wound, and the capsule incised along the convex aspect of the kidney. The organ was congested, and the capsule was thin and difficult to strip, being very adherent, portions of the cortex coming away with the capsule.

The patient stood the operation very well, but in the evening he was very restless, and developed evidence of bronchitis.

At midnight the catheter was passed, and only 4 oz. of urine obtained. The following day he was somewhat better, and passed 26 oz. of urine; and by April 11th the urinary amount had risen to 62 oz. During May and June the patient improved considerably, the urinary amount averaging 50 to 60 oz., and the albumin diminishing (1 to 0·6 gr. per oz.).

The improvement was so considerable that decapsulation of the second kidney was advised, but the patient refused to submit to any further operative procedure.

At the end of June the patient was sent to the Convalescent Home. His general condition had distinctly improved, but he was very weak. While at the Convalescent he relapsed, and was readmitted to Ward 29.

During July there was progressive deterioration in the general condition. He died on 6th August, exactly four months after operation.

We are indebted to Dr. Gibson for the opportunity of examining the kidneys.

Pathological Report.

The right pleural cavity contained 30 oz. of fluid, and there were firm fibrous adhesions scattered irregularly throughout.

The left pleural cavity contained 15 oz. of fluid, and similar firm adhesions were present. The pericardial sac was almost completely obliterated by fibrous adhesions; the arterial valves were competent. The right auricle was dilated, and its wall very distinctly hypertrophied; the tricuspid orifice was dilated, and its segments thickened throughout. The right ventricle was dilated, and considerably hypertrophied. The segments of the pulmonary artery showed some thickening. The left auricle was dilated and hypertrophied. The mitral orifice was dilated, admitting four fingers; its segments showed a moderate degree of fibrosis. The left ventricle was very markedly hypertrophied, and there was some dilatation. The aorta showed one or two small patches of atheroma. The aortic segments were thickened. The coronary arteries showed slight thickening, but very little atheromatous change. The heart muscle was pale, but in both ventricles was extremely firm. The left ventricle showed distinct chronic myocarditis. *Lungs.*—The root glands were not enlarged. In the left lung the bronchi were congested and contained some viscid mucus, and the minute bronchi were pigmented. The larger branches of the pulmonary artery showed no special change. The pleura was thickened over the whole lung, especially over the lower lobe. On section, the upper lobe was congested and œdematous, the lower lobe collapsed and congested. There was no evidence of pneumonia. The right lung showed a condition similar to the left.

The liver weighed 3 lb. 8 oz.; the capsule was thickened and adherent to the diaphragm. The gall bladder contained orange-coloured bile, no gall stones. On section, the liver showed advanced chronic venous congestion, with considerable fatty change. The substance was extremely friable; there was no evidence of cirrhosis. The spleen weighed 8 oz.; it was enlarged, and showed evidence of chronic venous congestion.

The left kidney weighed 5 oz.; the capsule was thickened and adherent, stripping in layers; the surface was slightly roughened, there was no evidence of subcapsular cysts. On section, there was very considerable atrophy of the cortex, especially the deep. The vascular markings were very irregular and indefinite; there was no evidence of any acute change. The Malpighian bodies were visible but not congested, and appeared to be scanty, as if a number were atrophied. There was an increase in the pelvic fat. The vessels of the organ were thickened. The condition was one of chronic interstitial and parenchymatous nephritis.

The right kidney, which had been decapsulated, was removed along with the surrounding tissues, and hardened for examination. There was found marked adhesion between the kidney and the surrounding structures, especially at the postero-lateral aspect. The capsule appeared to be considerably thickened, and was with difficulty stripped from the kidney. When apparently stripped, it was seen that there was still a thin layer adherent to the kidney, which could only be stripped in places. The stripping of these layers caused laceration of the superficial cortex. The naked-eye appearance of the kidney itself corresponded with what was found in the left kidney.

The microscopic appearance of sections (Plate XVII. Figs. 1 and 2).

(*a*) Sections through the surface of the decapsulated kidney, at the pole opposite the renal vessels. The superficial layers of the capsule had been stripped at the autopsy, the deep layers were adherent. The sections showed a definite fibrous capsule, the fibrous tissue being well formed, and at no part cellular. There were fibrous prolongations from the capsule into the kidney substance, some of these being cellular, the cells being wholly of the small mononucleated type (Fig. 1). This capsule was extremely vascular, and many of the vessels widely dilated. At places there was distinct anastomosis between the cortical and capsular vessels (Fig. 2). The kidney itself shows chronic parenchymatous degeneration, with a considerable amount of interstitial change in places. The glomerular tuft showed distinct fibrous change, but there was no special thickening of Bowman's capsule.

(*b*) A section from the dorsal aspect of the kidney, with the perinephritic tissues (Plate XVII. Fig. 3). The perinephritic tissues were firmly adherent to the kidney, and it was not possible to make out any boundary line between them and the capsule of the kidney. The part adjacent to the kidney was in the main composed of dense fibrous tissue; in places, however, there were large cellular foci, spreading into the kidney substance.

In the outer part of the thickened capsule there were remains of kidney tubules, showing conclusively that the deeper layer (*i.e.* that between the kidney substance and the separated tubules), though dense, was a newly formed capsule. This new capsule was very vascular, and at places there were large vessels, which seemed to anastomose with vessels in the superficial part of the cortex of the kidney. At places there was a very distinct formation of new fibrous tissue, external to the capsule, or, at any rate, to a layer of the capsule which was adherent to the kidney. This new fibrous tissue was invading and obliterating the fat cells in the perinephritic tissue (Fig. 3). This new tissue was very vascular.

In this case, then, decapsulation was followed by the formation of a dense new capsule. The new capsule, though dense, was vascular, and contained vessels which appeared to anastomose with the vessels in the superficial part of the cortex of the kidney; but it is doubtful whether the formation of these new vessels could more than compensate for the normal communication between the renal and perirenal vessels, which was ruptured by the operation of decapsulation.

The new capsule formation was accompanied by a prolongation of new fibrous tissue into the cortex of the kidney. The interstitial changes existing before decapsulation were thus accentuated.

From the clinical standpoint, is decapsulation of the kidneys an operation from which benefit may justly be expected? In cases of chronic nephritis, which are obviously on the down-grade, that benefit follows the operation the present and other recorded cases show.

Decapsulation has been followed by a marked diuresis, and a subsequent diminution in the excretion of albumin and a rise in the urea excretion. The diuresis cannot be ascribed to the formation of a new vascular supply, as the onset is, as a rule, within forty-eight hours of operation. Two explanations seem feasible—(1) That the operation relieves the circulation through the organ by relieving tension, the diuresis resulting from the improved mechanical conditions under which the blood is circulating in the organ. Against this view, in a number of recorded cases, and certainly in the present instance, is the fact that, at the time of operation, there was no evidence of increased tension in the kidney. (2) It is possible that the influence of operation is through stimulation of the sympathetic centres, a diuresis being produced similar to that produced by stimulation of the colon by hot-water irrigation.

Either explanation would point to the simpler operation of incision of the kidney being preferable to decapsulation.

On pathological grounds, the ultimate effects of decapsulation seem of doubtful benefit. A dense new capsule forms, and if conditions of renal tension were originally present, they are liable to be accentuated by any exacerbation of the disease. After decapsulation there is undoubted formation of new vessels passing into the cortex, but these vessels are accompanied by newly formed connective tissue cells, which eventually are converted into strands of more or less dense connective tissue. It must be expected, therefore, that the formation of new connective tissue will accentuate the interstitial changes in the organ. The contraction of these newly formed tissues must inevitably lead to pressure upon the newly formly vessels, and diminish the circulation. Therefore it must be concluded that, on both clinical and pathological grounds, incision of the kidney is to be preferred to decapsulation.

Incision of the kidney may be desirable in acute nephritis, when there is evidence of kidney tension with anuria. In chronic parenchymatous nephritis, incision of the kidney may be expected to produce a diuresis when other measures have failed, either by relieving the circulation through the organ, or acting through the nervous system. A diuresis at a critical time in the disease may tide the patient over an anxious period, and may permit of improvement taking place. Neither decapsulation nor incision of the kidneys can be expected to cure chronic nephritis, nor the underlying pathological conditions upon which the kidney changes depend. In chronic interstitial nephritis the kidney changes are but a part of a general condition. Incision or decapsulation may relieve symptoms: it is not reasonable to expect it to cure the disease.

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DESCRIPTION OF PLATE XVII.

FIG. 1.—Shows new very vascular capsule; anastomosis between vessels in the capsule and in cortex; and fibrous prolongations from capsule into the kidney substance. × 35.

FIG. 2.—Showing vascular new capsule, and anastomosis between capsular vessels and vessels of renal cortex.

FIG. 3.—Showing invasion of perinephric fat by new connective tissue, dense fibrous capsule, and cellular prolongation into cortex of kidney. × 50.

LATE RICKETS.

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(PLATES XVIII. AND XIX.)

RICKETS, as is well known, is especially a disease of infancy. The great majority of the cases occur between the ages of 6 months and 2 years. A few cases have been described in which enlargements of the ends of the bones, with bending of the shafts of the long bones of the extremities, have been first noticed in older children, and to such the name of late rickets has been given. Cases of this description are sufficiently rare to warrant a detailed account being given of each occurrence. Their nature is still dis-

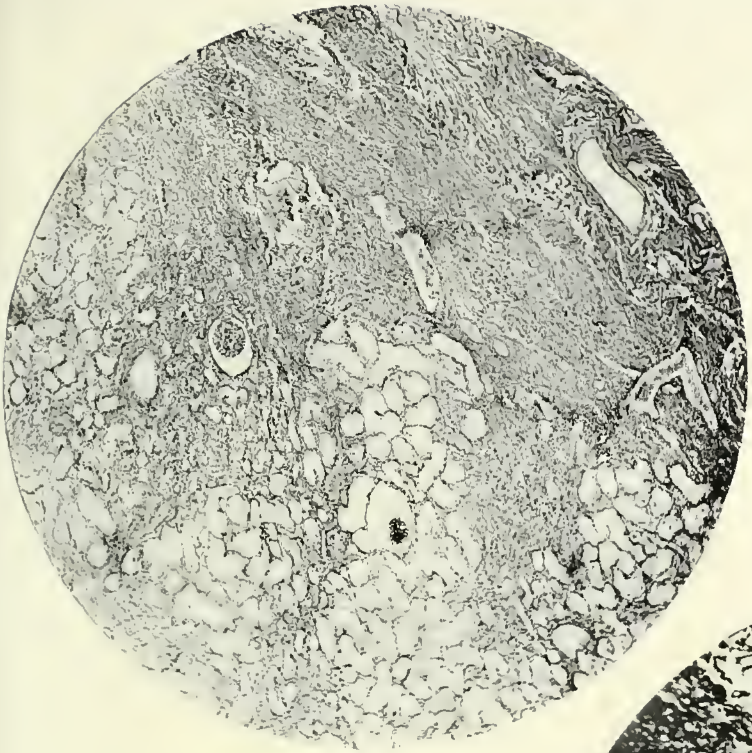

Fig. 1.

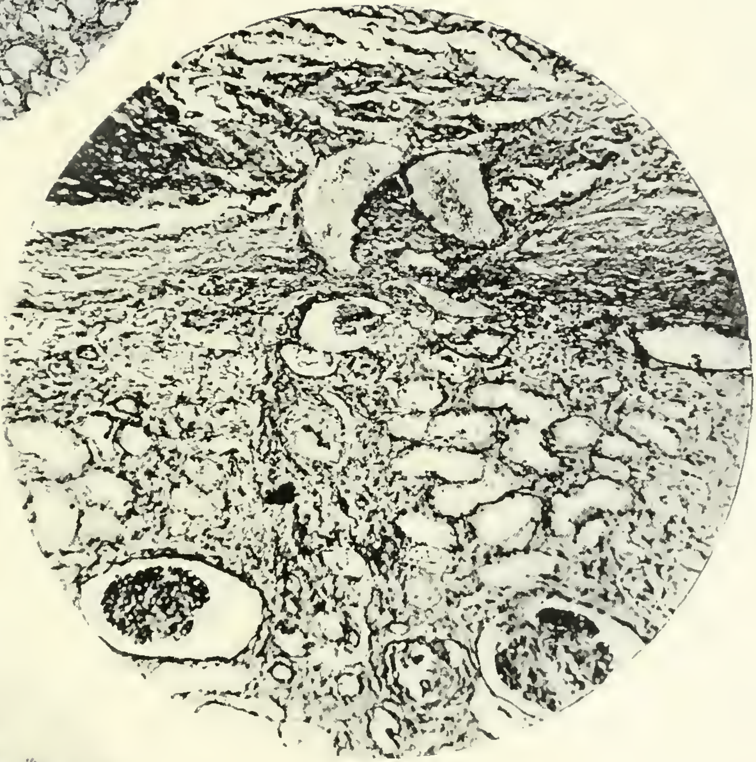

Fig. 2.

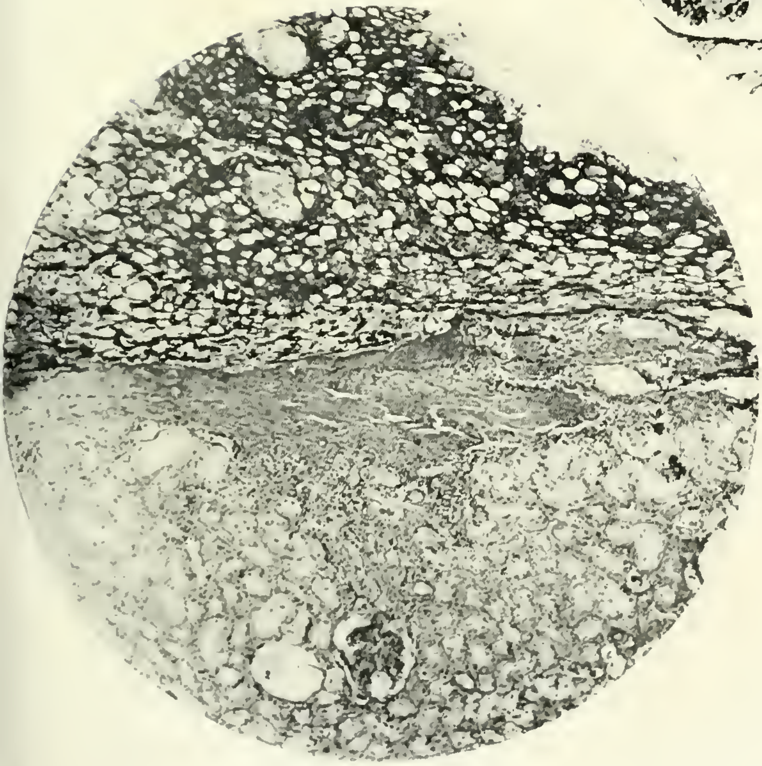

Fig. 3.

puted, though the consensus of opinion seems to favour the view that it is essentially an identical process with rickets in infancy. It may be, then, that a careful study of these cases, from their rarity itself, will help to advance our knowledge of the etiology of the commoner affection. Apart from that consideration, however, the case I am about to report offers still further interest, in that the manifestations of the disease occurred at a later date than in any previous case of which I have been able to obtain a record.

Case.—The patient is a girl, æt. $18\frac{3}{4}$ years. She is the third member of a large family of eleven children. Her parents, æt. 54 years (father) and 43 years (mother), are living, of apparently normal development, and both strong and healthy. She has three brothers and three sisters living. None of them have suffered from symptoms of rickets, and none of them have had thickenings of the ends of the bones, nor bending of the limbs. Three male children died in infancy—one from "concussion of the brain" after a fall, one from bronchitis, and one from "consumption of the bowels." A female child also died when æt. 4 years, the cause being stated to be "paralysis of one side of the body."

The mother has never had any miscarriages, and the children have all been apparently healthy at birth, not showing any evidences of a syphilitic infection. The mother says that at the birth of the child under consideration there was an unusual quantity of "water" (liquor amnii), and the infant, though plump and well formed, was very small. Since birth she has always been small and under-developed. During her infancy she had no enlargements of the bones at the wrists, knees, or ankles, and there was no bending of the bones of the extremities. She had, however, a large abdomen, and the skin had a yellowish tint. In addition, she suffered from attacks of diarrhœa and vomiting, and her stools were very offensive, "quite different from the other children." At 2 years of age she suffered from measles, at 4 years from scarlet fever, and since she was about 7 years of age she has had attacks of headache and sickness, which have recurred almost every two or three months. She has never menstruated. She was brought up exclusively on the breast until she was 4 months old. She was then put on cow's milk and water, equal parts, sometimes having a biscuit crumbled into it. When between 5 and 6 months old she was allowed a crust of bread to suck. At 9 months she got a little beef-tea, or gravy and bread, and in addition some potato. Till 12 months old she was kept on the bottle, but after that "ordinary food" was given. Of the other children, three were on the breast till 2 years of age, and the rest till 9 months old, and all these children developed steadily in a normal manner, being free from any symptoms of gastro-enteritis or rickets.

The first tooth was cut when she was 8 or 9 months old. She did not have much trouble when cutting her teeth, but she was 3 years old before all had appeared. She was able to sit up at 6 months, to crawl on her hands and knees at 15 months, and she was 2 years old before she was able to walk. When 5 years old her mother thought she seemed very much smaller than other children of the same age. She had always been small, but her mother noticed it more at that age. There was no bending of the limbs, and no enlargements at the ends of the long bones. She went to school when she was between 4 and 5 years old. Her habits were not different from those of other children, except in respect to food. She played, and took part in all out-door games. At 14 years of age she left school, and at 15 years she went to work. She worked from 6 a.m. to 5 p.m., and though the work was not heavy, she was kept indoors almost the whole of that time. There were many other girls about her own age at the same work, and they were apparently quite healthy. She continued at work for three years. She has apparently from an early age been peculiar in respect to her predilections and objections to various kinds of food. She would eat meat of any kind, including ham or pork, on every opportunity, and as much as her parents would give her. She would also take bread, but she steadfastly refused to take any vegetables, and was not partial to milk. Further than this, she might be described as having a craving for ordinary table-salt, eating it alone, openly and clandestinely. In these respects she differed absolutely from the other children in the family.

She had been vaccinated in infancy, and this operation was repeated when she was 17¾ years old. Three weeks later she complained of general weakness and loss of appetite. When 18¼ years old, after taking a long walk she was very much exhausted, and from that time she has never seemed able to walk without great fatigue. Her legs were then, however, quite straight, and there was no swelling of the wrists, knees, or ankles. The weakness in muscular power seemed to increase, and, in addition, her appetite was very poor. Two months later she began to complain of pains in the legs, and walking or standing became difficult and caused pain. Soon afterwards also she suffered from pain in the arms and back.

When 18½ years of age it was first noticed that the ankles and knees were swollen, whilst the left leg began to bend inwards at the knee. Subsequently the right leg began to bend outwards, and swelling occurred at the wrists. These swellings have been gradually getting more marked since, and she has steadily become weaker, so that she is now totally unable to walk.

Present condition.—The patient is a small sallow girl of 18¾ years. Her weight is 63 lb. 10 oz., and her height 50⅛ in. She is very intelligent, but her general development corresponds rather to that of a girl of ten or eleven years. The breasts, however, are well developed, and are alone in conformity with her age. There is no hair in the axillæ, and very little over the pubes.

The face has a yellow, rather sallow, appearance, and the exposed parts of the sclerotics are pigmented a yellowish-brown colour. The parts of the sclerotics covered by the eyelids are not pigmented. There is also a brownish pigmentation of the skin at the root of the neck, over both folds of the axillæ, over the front and sides of the abdomen and the lower part of the chest. The linea alba below the umbilicus is well marked.

The skin is soft, smooth, free from scars, and, beyond the pigmentation mentioned, seems quite healthy. The face is well-formed and intelligent looking. The nose is not *retroussé*, nor flattened across the bridge. The head is dolicho-cephalic, having a circumference of $19\frac{7}{8}$ in., and free from parietal or other bosses. The forehead is rather narrow than broad, but its general configuration and position is good. The teeth are extremely irregular in position, being considerably over-crowded, especially in the region of the upper canines, and there is extensive caries. The tip only of the left upper lateral incisor shows through the gum. The gums do not show any swelling, but in several places adjoining the teeth they tend to bleed with slight mechanical irritation. The thyroid is slightly enlarged, being distinctly visible, smooth, and elastic. There is no evidence of enlargement of the thymus. No signs of any abnormal condition, on physical examination, could be detected in the lungs, liver, or spleen. Over the heart a faint systolic murmur was audible at the pulmonary area, and also in the vessels of the neck; otherwise no abnormality was noted.

Bones.—There is marked enlargement of the lower epiphyses of the ulna and radius in both arms; also of the lower epiphyses of both femurs, and the upper and lower epiphyses of the tibia and fibula in both legs. In addition, all these bones were distinctly shorter than the normal. The variations can be seen in detail from the following measurements:—

Circumference of left radio-ulnar enlargement	$5\frac{3}{4}$	inches
,, above ,, ,,	$4\frac{7}{8}$	,,
,, of right ,, ,,	$5\frac{7}{8}$	,,
,, above ,, ,,	5	,,
Length from styloid process of ulna to external condyle of humerus	7	,,
And from external condyle to acromion process	10	,,
Circumference of left knee over the patella	$10\frac{5}{8}$	,,
,, ,, just above patella	$9\frac{1}{4}$	,,
,, round heads of tibia and fibula	$9\frac{1}{2}$	,,
,, over the malleoli	$7\frac{3}{8}$	,,
,, just above the malleoli	$6\frac{3}{8}$	,,
Length of thigh from the anterior superior spine of the ilium to the upper point of the internal condyle of the femur	13	,,
And from the internal condyle to the tip of the internal malleolus	13	,,

Taken directly, the length from the anterior spine to the tip of the malleolus is 25 in., the loss of 1 in. being due to the marked genu valgum.

On the right side the measurements show corresponding changes, thus:—

Circumference at the knee over the patella	$10\frac{1}{2}$	inches
,, ,, just above the patella	$9\frac{3}{8}$	,,
,, round heads of tibia and fibula	$9\frac{3}{8}$	,,
,, over the malleoli	$7\frac{1}{2}$	,,
,, just above the malleoli	$6\frac{1}{2}$	,,
Length from the anterior superior spine to the internal condyle of the femur	12	,,
And from the internal condyle to the internal malleolus	12	,,

As already stated, the left leg is in the position of marked genu valgum, whilst the right shows slight genu varum.

Handling of the limbs showed that there was much tenderness, which was most marked over the head of the fibula. Tapping over the enlarged ends of the bones, over the shafts of both tibiæ, over the forehead and parietal regions, and all along the spine, caused distinct pain, but there was no softness felt either in the bones or the enlarged epiphyses. The clavicles were of normal contour, and not definitely enlarged at their inner ends. The sternum showed no change. All the ribs were distinctly enlarged at the point of junction of the bony and cartilaginous portions, and these enlargements were visible below the skin both above and below the breasts. The ribs seemed broad, but were pliable and wanting in resistance. The bone itself seemed fairly firm. On the left side, in the axilla, they seemed to be tender.

The circumference of the chest at the level of the xiphi-sternum was 27½ in., and above the breasts 27 in. There was thus no evidence of any marked deformity in the shape of the thorax. It is, however, a noteworthy fact that the act of inspiration only increased the circumference by ¼ in. It may be that this was due to the marked muscular weakness.

The spine showed a general kyphotic curve when the patient was in the sitting posture, apparently also due to the weakness of the erector spinæ. There was no scoliosis, and no enlargement of the spinous processes, which were not unduly prominent. The angles of the scapulæ remained flat against the sides of the chest.

The measurements of the spine were as follows:—From the occiput to the seventh cervical process, 4 in.; from the seventh cervical process to the level of the iliac crests, 12¼ in., and to the tip of the coccyx, 19 in.

There were no supraclavicular swellings, no flat foot, and no clubbing of the fingers or toes. The muscles of both arms and legs were very soft and flabby, and, as already stated, there was marked muscular weakness. The grasp of both hands was very feeble, and flexion or extension at any joint and in any limb could without difficulty be resisted or prevented by the opposition of one finger.

Examination of the fresh blood showed no difference in the size or shape of the red corpuscles, which arranged themselves into characteristic rouleaux. The hæmoglobin gave 65 per cent. of the normal. The number of erythrocytes was 3,450,000 per c.mm., and of leucocytes 4000 per c.mm.

The urine was very faintly acid, its specific gravity was 1020, and there was no albumin, no albumoses, and no sugar. On standing it remained quite clear, save for a slight deposit of mucus. Urea was present to the extent of 9 grains per ounce, the average daily amount of urine being about 30 ounces.

The excretion of chlorides for twenty-four hours was 10 grms., and of phosphates 1·9 grms. The inorganic sulphates also were abundant. There were no organic sulphates.

It is evident that the diagnosis of the above case presents little difficulty, the characteristic enlargements of the ends of the long bones, the stunted growth, the defective dentition, and the marked muscular weakness, with skeletal deformity, forming a picture so identical with rickets in infancy as to make its classification unmistakable.

In both the sexual and asexual forms of ateleiosis, or infantilism, there is an absence of the rachitic enlargements (1*a*); and, further, in this disease, as well as in cretinism and achondroplasia, the facial and bodily appearances are quite different. When first seen, the great tenderness over certain bones, the marked general weakness, the distinctly sallow or brownish pigmentation of the skin, coupled with the skeletal deformity, caused one to think of osteomalacia, possibly complicated by Addison's disease. Osteomalacia, however, consists in a progressive softening of the bones, leading to deformity, and is almost confined to adults, whilst the history, sex, age, absence of gastro-intestinal symptoms, and want of localisation of the pigmentation to such areas as the mouth, axillæ, etc., negative the view of the possible superaddition of Addison's disease.

It is evident, then, that the case must be considered to be of a rachitic nature, and the clear history of an absence of deformity until the advanced age of 18½ years stamps it as an example of so-called late rickets.

As already stated, rickets is essentially a disease of infancy and early childhood; thus Baginsky (1), in his work, founded on 624 cases, of which 345 were males and 279 females, only met with three cases above the age of 4 years, namely, one of 5 years, one of 6 years, and one of 13 years, all occurring amongst females. Holt (2) in his most recent publication says: "Rare instances have been reported of bony deformities, in all respects like those of rickets, developing in children from 6 to 12 years old. A number of such cases have been observed in England. I have not seen this disease, nor has a case been seen during the past twenty years at the Hospital for Ruptured and Crippled, New York, where more deformities come under observation than anywhere else in this country." Though usually evidences of late rickets are seen in lanky overgrown boys and girls, still the occurrence of such cases cannot be doubted, for, as stated by a recent writer (3) on the subject, in rare instances in later childhood "the deformities of the bones much more resemble the type of rickets seen during the second year."

The question then arises, are these cases of a genuine rachitic nature? and the reply must be dependent on the opinion as to what combination of symptoms and signs constitutes the distinguishing characteristic of rickets.

Clutton (4) apparently makes the enlargement of the epiphysial ends of the long bones as the crucial test. There can be no doubt of the importance of this sign, and it is distinctly fortunate that it is most commonly and most persistently met with in situations which are readily accessible to our senses, *e.g.*, the ribs and the long bones of the limbs. Leaving aside for the moment the consideration of the ultimate etiological factor, we know that the degree of deformity at the ends of the bones is largely dependent on the activity of the process of growth. By this means only can we apparently explain the relatively slight changes which are to be found at the posterior ends of the ribs, whilst the anterior ends of the same bones show the most marked enlargement. In the same manner, we are able to explain the manifest and constant differences which are found at opposite ends of the long bones of the limbs. It is thus evident that the bony deformity will vary with the age of the patient. Relative and absolute growth is most marked during the early period of life; and Trousseau (5) accounts for the relative immunity from rachitis of the middle period of childhood by the fact that "from the beginning of the fourth year growth proceeds more slowly up to the age of puberty, when it takes a fresh start."

It is, further, quite possible that the amount of alteration at the growing ends of the bones is dependent on the degree of intensity, and on the nature of the causal factor or factors, as well as on the condition of the supply of nutrition. It is therefore only to be expected that the clinical manifestations of bony deformity should offer great variety in different cases, a condition which agrees with everyday experience. There can be no doubt that an exact connection or relationship between the degree of epiphysial enlargement, or a constant relative size of the ends of the bones in different individuals, on the one hand, and a definite degree or severity of the constitutional alteration from the rachitic process, as evidenced by the general ill-health, the anæmia, muscular weakness, and digestive or respiratory disturbances, on the other, is far from an observable fact.

In my own case it was the enlargement of bones at the wrists, ankles, and knees which caused me, in the first instance, to make the diagnosis of late rickets. Though I had never seen a previous case, the similarity, or rather the identity, of appearance was so unmistakable that any other diagnosis than that of rickets was manifestly impossible. Without, then, for one moment detracting from the importance of this sign, I am still of opinion that theoretical considerations, as well as the practical observations of other writers, which I shall mention later, do not warrant us in accepting Clouston's verdict, that it constitutes a crucial test. It seems to me that, in the state of our present knowledge, any alteration in the growth of bone, in the nature either of a deficient or an abnormal formation, and either affecting all the visible or palpable long bones, or only affecting the bones of certain regions, might, coupled with manifestations of general ill-health, conceivably be of a rachitic nature. In connection with this point, it is possible that the use of the Röntgen rays may in the future be of the greatest assistance. From the radiograms of the affected bones in my own case, excluding deformities, it is evident that two marked abnormalities are present. In the first place, the outlines of the ends of the bones are lacking in sharpness and distinctness, owing probably to the deficiency of lime salts in those situations. A still more marked alteration, however, is the excessive width of the epiphysial cartilage, which, instead of being about $\frac{1}{12}$ of an inch across, is at least five or six times as broad. Both of these peculiarities are mentioned by Professor Roos (6) in connection with a case which he reports, and in a footnote (p. 122) he states that, so far as he knows, the X-rays have seldom been used for the diagnosis of rickets. Owing to the kindness of Dr. Ashby and Dr. Hutton, I have been able to obtain radiograms of three other cases of rickets, whose ages were respectively 4½, 6½, and 13 years, all of which show a similar condition as regards the epiphysial cartilage.

It has been observed by Kassowitz (7) that the height of the growing epiphysial cartilage, so far as concerns its growth on the side of the diaphysis, varies with the age of the individual, but shows as age advances a steady, though increasingly slow, diminution.

Kassowitz gives the following figures for the breadth of the intervening cartilage:—

In a 6-months old fœtus	2·4 mm.
,, the new born	1·6 ,,
,, a 1-year old child	0·6 ,,
,, a 3-year old child	0·4 ,,

The above measurements were taken from the anterior ends of the ribs of apparently normal growth, whilst at the same situation in rachitic infants this investigator obtained the following measurements:—

In a 2-months' child	7·0 mm.
,, 3 ,, ,, ...	8·0 ,,
,, 1½ years' ,, ...	7·0 ,,
,, 2 ,, ,, ...	3·5 ,,
,, 2 ,, ,, ...	5·0 ,,
,, 2½ ,, ,, ...	2·2 ,,

A comparison of these two sets of figures shows the enormous enlargement of the growing cartilage at the end of the diaphysis in rachitic subjects, and the post-mortem evidence here given seems to me to cause great importance to be attached to the manifestations given by the X-rays in the cases I have cited.

Professor Roos was only able to find two cases in which the rays had been used for diagnostic purposes. In one of these, described by Maffei of Brussels, there is stated to have been "a delay in the epiphysial ossification." In the other, mentioned by Poland (8), there is no reference to the width of the cartilaginous zone, the evidence being limited to the statement that "the epiphysial lines of the femora and tibiæ were seen to be unaltered from their normal direction."

It is thus evident that the use of the Röntgen rays may be of the greatest assistance, not in the diagnosis of a typical case of rickets, but in the irregular and abnormal developments of growing bone, by assisting in the elucidation of their nature, and it is greatly to be hoped that ere long we shall have a complete consecutive series of observations illustrative of the normal condition at various ages. An examination of the radiograms of the three cases which I have been able to obtain, shows that the position of the external epiphysial enlargement is taken up by the broad band of cartilage which I have mentioned, and it may be that the measurement of this cartilaginous zone will constitute a much more reliable test for the diagnosis of rickets than the one advocated by Clutton. On this point it ought to be mentioned that James (9), in a youth æt. 20, found by the X-rays no evidence of incomplete epiphysial union.

A detailed study of my case, then, confirms the generally accepted view that they are of a genuine rachitic nature; and this opinion has been substantiated by Barlow and Abercrombie (10), who conducted a post-mortem investigation upon a case reported by Dawtrey Drewitt (11). In that case the writers found that "the bones present all the features of the infantile disease."

At the present time Comby (12) is the most prominent opponent of the view of the rachitic nature of these cases. He regards them as identical with osteomalacia. Trousseau (13) even went further, and stated that in his opinion osteomalacia and rickets are one and the same disease. Kassowitz and other writers upon this subject have, however, shown the non-identity, and even marked dissimilarity, between these two diseases; and we may, on theoretical grounds, accept the genuinely rachitic nature of such cases as my own, for, as pointed out by d'Espine and Picot (14), ossification is not complete till after twenty years, and an increased rate of growth takes place between fifteen and twenty years.

The question next arises, are the rachitic manifestations ever visible for the first time in later years without any previous indication of rickets in early life? If we accept Clutton's "crucial test" for rickets, then my own case and many others (Clutton's, Dawtrey Drewitt's, James', etc.) must compel an immediately affirmative answer. Theoretically, when we remember that the process of growth is continued throughout the first twenty years of life, there can be no objection to the possibility of its arising at any period during that time. A consideration, however, of the reported cases seems to indicate that the supervention of rachitic bony deformity after a prolonged period of normal growth must be a very great rarity, if not an as yet unobserved occurrence.

Taking the cases seriatim in which I have been able to find evidence upon this point, it is to be noted that in Clutton's second case, a girl of 14 years, she had always been "very small and stunted in growth," being then only 3 ft. 10½ in. in height and 4 stones 2½ lb. in weight. Drewitt's case is stated to have been a healthy and active boy till 9 years old. There is no mention made of his height; but having been weaned at 2 months, and fed on milk, with cornflour and arrowroot, we are not surprised to learn that, though there was no tenderness, no restlessness, and no deformity as an infant, and that he cut his teeth early, yet there was marked nocturnal sweating about the head, and that "he could walk well and run at 2 years," but apparently not before.

James' case was a young man, æt. 20, who, beyond having three or four fits as a child, for which no cause is suggested, was apparently healthy till 17 years of age, when he had been for two years serving as a sailor on board ship. He was 4 ft. 8 in. in height at 20 years; but the spine was hollowed, so that allowance must be made for this fact. In the absence of bendings of the long bones of the leg, it would seem that he had probably always been much below the normal height, and it is unfortunate that no further evidence is given upon the point.

In Roos' case the girl had been breast-fed for two months, is said to have digested cow's milk well, to have cut her first teeth at 7 months, and to have walked at 12 months. She then had "gastro-intestinal catarrh," and became weak, and lost the use of her legs for two months. The legs were quite straight till the onset of her illness at 12½ years old, but she had always been a small child, and at 17 years of age her height was only just over 4 ft. In my own case and in Dr. Hutton's there was similar lack of development. John Thomson of Edinburgh (^{15}) also reports the case of a child who had been apparently quite healthy till 6½ years old, when he had an attack of severe diarrhœa, after which the symptoms and signs of rickets developed for the first time. It is stated that the boy was small, but the information is insufficient to serve as a guide to the importance which must be attached to this statement.

Macewen (^{16}) gives an account of a clerk who was apparently strong and healthy till 15 years of age, when he had a severe attack of scarlet fever, which apparently initiated a series of symptoms culminating in marked manifestations of rickets. There is no further statement from which suggestive evidence for or against rickets in infancy can be obtained, and it may be that, from the profound change produced by the severe attack of scarlet fever, this is one of the very rare instances where the most detailed examination would fail to have revealed indications of rickets in infancy; but this point must remain inconclusive.

A consideration of the above cases is, to say the least, suggestive of the fact that in most instances of so-called late rickets there has throughout life been some interference with the normal growth of bone, and calls forth the question whether the evident arrest of development seen in several of the cases, even though unaccompanied by any epiphysial enlargement or bony deformity, may not have been of a rachitic nature. Can it be that the rachitic process is in a sense capable of becoming quiescent: ossification and growth being deficient, but the process insufficiently active to produce the characteristic morphological changes until a further factor is added, *e.g.* puberty, violent exercise, a severe illness, etc.? It is possible that the use of the Röntgen rays in future cases of defective development may throw some light upon this point. Late rickets being then of an essentially identical nature to infantile rickets, it is evident, as suggested by Clutton, that there may be three possible modes of origin. Thus it may be that it occurs for the first time at the later period of life in an individual previously quite healthy. Secondly, it may be that an attack of rickets in infancy does not completely subside, so that, from defective treatment or superadded cause, a relapse occurs, and the process again becomes active. Thirdly, it is possible that the attack of infantile rickets may completely be recovered from, and after a variable period of normal growth a recurrence takes place. It is evident that, in the present state of our knowledge, cases belonging to type (2) will seldom enter into question; and most writers would agree with Clutton, even though they did not limit, like him, the age of the patients to a definite number of years, that a continuous and clear connection with infantile rickets excludes inclusion in the late variety.

It would seem that Ollier (17) was the first, in 1861, to attribute many of the bony deformities of later childhood and adolescence to rickets, which had previously been considered to be due to osteomalacia. He spoke of a primary form, agreeing with Clutton's first type, and of a secondary form, identical with the latter's third type. In addition, he noted the rarity of the primary form, and pointed out the difficulty of making the diagnosis, on account of the frequent impossibility of proving the absence of rickets in infancy.

I have already dealt with this question; and though not denying the occurrence of the primary form, have suggested that it is still rarer than is usually believed, since, on account of a less limited view of the manifestations requisite for the suspicion, if not the diagnosis, of rickets, I consider it possible that even such apparently typical cases of the primary form as those reported by Clutton, Roos, and myself may in future be shown, by an extended observation through life, with the assistance of the Röntgen rays, to have exhibited previous signs of rachitic changes at the growing ends of the bones.

Deydier (18), a pupil of Ollier, subdivides the latter's classification into a general form, which is rare, and into a local form, in which only one, or a few, regions of the bony skeleton are affected. The local form, he says, is much commoner, and includes the cases of so-called idiopathic genu valgum and varum, as well as scoliosis, which develop in adolescence.

Deydier made the above classification in 1895. Clutton, writing nine years previously, excluded from the heading of late rickets those cases of bending of the bones about puberty or later, which occur without epiphysial enlargement. Such cases he considers to be "due to a want of proper consolidation of the bones in proportion to the increasing weight of the body." He would admit cases, such as the five described by Lucas (19), where, in youths from twelve to seventeen years of age, scoliosis, or genu valgum, was in each instance accompanied by enlargement at the epiphysial ends of one or more of the long bones of the limbs. I have previously stated that, in my opinion, epiphysial enlargement, though of the greatest importance, is not a sufficiently reliable test of the presence or absence of rickets; and this view is strongly supported, if not verified, by the evidence which we possess on the point under consideration.

Mikulicz (20), in 1879, after an extended observation conducted on the lower end of the femur in normal and abnormal cases, found that the whole breadth of the epiphysial cartilage in the frontal section of a normal femur during the period of growth is 1 to 2 mm. On the other hand, in a youth with slight genu valgum, he found that there was a considerable broadening of the epiphysial cartilage. The enlargement especially affected the columnar layer of growing cells, which had a breadth of 2 to 3 mm., whereas in the normal condition it was only ½ mm. Moreover, he states that "the macroscopical and microscopical findings agree so remarkably with the changes which one recognises as characteristic of rickets, that here we can rightly say there is present a rachitic broadening of the epiphysial cartilage."

Thiersch (21) also reports the case of a girl 16 years of age of rachitic build, with genu valgum, who died with evidence of advanced contracted kidneys, whilst "the epiphysial cartilage showed the irregular growth which is characteristic (*zukommen*) of rickets."

Other writers, in addition to genu valgum, have included cases of scoliosis and flat foot. Tripier (22) having stated that rickets appears more especially at the times when the normal growth of the skeleton is most rapid, finds that genu valgum is most likely to arise at various ages at which the "height of the conjugating cartilage of the lower extremity of the femur is increased," which he considers, I think erroneously, tantamount to saying that growth in height is more active. He is fully aware "that some writers will object that this greater height of the conjugal cartilage is a rachitic lesion," but he considers that Broca has shown that more than an increase in height is necessary to characterise a rachitic alteration. I have been unable to find this communication by Broca.

Without entering any further into the bibliography of this subject, I think we may accept Macewen's (23) conclusions that osseous deformities of the lower extremities (knock-knees, bow-legs, and various femoral and tibial curves) originate in rickets, since—

(1) Their etiology is identical—some cause of severe and prolonged debility. (2) Rickets and these osseous deformities abound in the same individual. (3) The period of life during which these deformities occur is limited and is identical with the period during which rickets attacks the body—the period of growth. (4) Deformities which are physically identical with those above mentioned arise from rickets, and in the few cases examined the histological characters are the same.

Accepting Ollier's basis, then, for the classification of cases of late rickets, and supplementing Deydier's addition, we may recognise the following types:—(A) A general affection, which may be (1) primary or (2) secondary. (B) A local affection, which may be (1) primary or (2) secondary.

Late rickets being a rare disease, but of an essentially similar or identical nature to the common infantile form, it is natural to inquire whether its supervention throws any light upon the much disputed pathology of the rachitic process.

I think it may be safely asserted that rickets is a disease *sui generis*; that is to say, that it is a distinct entity, even though it exhibits, like other diseases, multifarious manifestations. On this account, therefore, it is only natural to expect that either it will always be caused by the same etiological factor, or, if many factors are concerned, that they will show a very close connection, to explain their similarity of action. A moment's reflection will show that the second suggestion offers the readiest solution of the difficulty, since by such means only can we hope to combine the numerous influences which have been proved to be concerned in the causation of rickets.

At the present time it is generally recognised that rickets is not simply a disease of the bones, but a general affection, of which the enlarged epiphysial ends, and bending of the shafts, etc., constitute the local, but more or less disseminated, indications.

Though, as stated by Sir William Jenner (24), "we see all degrees of enlargement of the ends of the ribs, and of the other long bones, from that where one might maintain the enlargement was only that proper to the child, to that in which the projections on the anterior wall of the thorax and the enlargement of the wrist would strike the most careless observer," and though, as Rokitansky (25) says, "sometimes it is more prominently marked in one portion of the skeleton, while the rest of the bones are but slightly affected," it may yet probably be safely asserted that a change in the formation of bone constitutes the most constant, the most marked, and the earliest manifestation of the rachitic process. In early cases this change is limited to the growing parts of the bone, and especially affects the ends which show the most active growth.

From what we know of the course and symptomatology of rickets, and of the physiological requirements of a growing tissue, we should expect any abnormality in the latter—excluding congenital, or hereditary, predispositions or alterations—to be dependent on some quantitative or qualitative change in the blood supply. We cannot readily imagine how, by any other means, these various parts of the skeleton could be simultaneously and similarly affected, and in a degree largely proportionate to the activity of the process of growth. On the other hand, we know that for growth an ample supply of nutrition is required, and that any interference with this supply—either in the introduction of an abnormal, irritative element, or in the deprivation of the proper quantity or relative amounts of the normal elements—will of necessity exercise its baneful influence on the process of growth.

It would seem to be superfluous to recapitulate the requirements for obtaining a satisfactory supply of nutrition. Carried out in detail, this would mean a recital of our knowledge of the physiology of digestion, assimilation, and metabolism, with excretion of waste materials; also of the physiology of respiration, and purification of the blood. In addition, we should have to consider the action of the various unhygienic conditions of life which may exert so powerful an influence on the system in general.

But though such a procedure is manifestly unnecessary, I think a brief review of some of the main requirements for healthy nutrition will be of the greatest service in assisting us to come to a conclusion as to the probable pathology of rickets.

It is a frequent simile to compare the body to a complicated engine, the fuel for its continued work being supplied by the food we eat. At the same time, such a comparison does not carry us very far, since in the human body the food is further required to enable constant repair to be undertaken, and during the period of growth to supply the materials from which such growth takes place.

So accustomed are we to accept this view of the process of nutrition, that there is a tendency to forget, or hold of slight moment, other influences which must exert a most powerful action in the same direction.

It may be said that the ultimate object of digestion and assimilation is the production of a constitution of the blood in which the various elements composing the food will be brought together and delivered to the tissues in a form and quantity most suitable for use.

But if the soluble constituents of the blood are of such great importance, what is likely to be the influence of the factors concerned in the production and regeneration of the blood elements themselves? In this respect, however, the necessity for an abundant supply of fresh air and of sunlight, and the noxious influence of the factors which may be grouped together as unhygienic surroundings, will be admitted by all, and the very constancy of their action will even prepare us to accept the conclusion of Kassowitz (^{26}), that these factors exert a most powerful influence on the production of rickets. The last-mentioned writer draws attention to the marked prevalence of rickets amongst the children of the poor as compared with those of the better classes, a difference which is one of the most remarkable appearances in the ascertained facts concerning the disease. He shows that it is not explainable by the differences in food supply, and believes that the essential cause is the difference in hygienic environment. Turning now more particularly to the food supply, we recognise that this must contain the following elements, namely, nitrogenous substances, especially various forms of albumin, fats, carbohydrates, salts, and water. In adults requiring food only for energy and repair, we know that a very great latitude in the relative amounts of these elements is permissible, compatible with health. It may be that in them the alimentary tract possesses considerable selective capacity, excreting, without injury to the individual, many substances taken in in excess, or admitting them, after digestion, to store them away in the form of fat; or, again, to excrete them, with the consequent damage to the excretory organs, after a prolonged continuance.

In infants, however, the digestive powers are limited at first very materially. Casein and lact-albumin seem to be the only nitrogenous bodies suitable for digestion and absorption, and the relative proportions of these must not, apparently, exceed certain limits. Moreover, the ingestion of unsuitable forms of albumin, of insoluble carbohydrates (starches), of an excess of fats, may each and all be followed by digestive disturbances, which, in addition to the consequent loss of these elements from non-absorption, further drains the system by the vomiting, diarrhœa, or other symptoms of gastro-enteritis which result.

How frequently one meets with infants fed on diluted cow's milk, which must of necessity be deficient in fats, or of milk combined with an excess of soluble or insoluble carbohydrates by addition of the various patent foods. Only quite recently I saw an extremely marasmic infant, 2 months old, which, under medical "direction," had for some weeks past been fed solely on a well-known patent food, largely dissolved in water, the insoluble particles being still in suspension. Can one, then, wonder at the gross ignorance of the requirements for infant feeding exhibited by the laity?

There is, however, no need to dwell on this subject, to which a great amount of attention has been, and is being, given by the various medical journals.

It is, however, desirable to draw attention to the fact that, as shown by Rotch, human milk—from poverty, from compliance with the claims of society rather than the infant, or from excitement or worry—may show a deficiency of one element (*e.g.* fat), or an excess of another (albumin), which not only leads to gastroenteritis, but to the absence in the blood, in their proper proportion, of the products of assimilation so necessary for healthy growth and development.

Given, then, a series of individuals of various ages, living under similar hygienic conditions, we can readily understand how it is that rickets, which we may more fitly describe as a disease of growth rather than a disease of nutrition (it is evident that the bony changes can only occur so long as growth is taking place), should be pre-eminently met with at a time when the powers of digestion and assimilation are limited. After this stormy period, owing to increased powers conferred by nature, the majority of individuals are able to obtain from the food ingested a sufficient supply of the various elements to permit of the process of growth taking place in a more natural manner. If, however, during these later periods, the hygienic environment be bad; if the child suffers from some acute or chronic ailment which greatly diminishes its potential powers for recuperation, or interferes with its subsequent nutrition; or further, if, as in my own case, the child shows idiosyncrasies which can hardly be compatible with normal nutrition—we need hardly be surprised in such cases at the occasional supervention of a condition which is more usually limited in its appearance to the earlier years of life. It is unfortunate that, in almost all the cases as yet reported, the positive and negative evidence upon the points I have mentioned is insufficiently dealt with to allow one to estimate approximately the part played by each.

It appears to me, therefore, that the various recognised etiological factors in the production of rickets may be grouped under one head as regards their effect on the blood. We may say that every factor interfering with the presence in the blood of the elements of nutrition in their proper proportion; all unhygienic conditions which diminish the oxygenation and regeneration of the blood, or prevent the formed elements from adequately performing their functions; and, finally, any hereditary or acquired disease capable of adversely influencing the powers of the tissues in general for growth and repair—may act as factors in the production of rickets. We shall thus be in a position to add a further reason for such a well-established but apparently inexplicable fact as the rarity of this disease in warm climates. I am aware that Kassowitz accounts for this last occurrence by the greater amount of time spent in the open air in warm climates; and it may be that this is the most important factor, as witnessed by the curative effects of a stay in the country in children already affected by the disease. Still it is possible that the severer climatic conditions in colder countries may constitute a greater drain on the infant's potential powers, and add their quota to the already heavy burden, which finally culminates in the manifestation of rickets.

But even though a *primâ facie* case for the above view may be surmised, from the assistance which it renders in explaining the action of the multifarious factors which have been proved to be concerned in the production of rickets, it may be argued that it lacks direct proof. Many writers believe that the essential agent is of a toxic nature. Thus Kassowitz expresses the opinion that unhygienic conditions act by absorption into the system of noxious gases, and others invoke the action of lactic acid, or toxins absorbed from the alimentary canal.

It appears to me that, in the first place, it would be remarkable if different toxins, as the result of their specific action, could produce identical results. On the other hand, as with the virus of syphilis, we must admit their ability to interfere with the normal powers for growth, reproduction, and performance of function of the different active cells. It is, however, impossible to include all the factors under the positive influence of a toxin, and we must in some cases fall back on the negative influence of an absence of normal conditions.

What evidence have we in support of this view? Rindfleisch ([27]), after describing the morbid anatomy and histology of the changes of the bones in rickets, says "that it seems far from unlikely, and quite in agreement with the general laws of nutrition and vascularisation, that the whole of this antecedent development of medullary spaces is really an effort at vascularisation, intended to supply both the proliferated and the non-proliferated portion of the cartilage with nutriment." Sir William Jenner also, in the article I have quoted, states that "whatever ailments interfere with nutrition, and so with the formation of good blood," and "whatever external conditions are favourable to the formation of hydræmic blood in a child seem to be favourable to the development of rickets."

The most detailed account, however, of the information which we possess on the subject of rickets is given by Kassowitz in his admirable work on normal ossification. This writer expresses the opinion that in the physiological state,—which comprises, of course an adequate supply of what may be termed normal blood, as well as healthy cells,—there is a regular destruction and regeneration "of greater or smaller particles of living substance" (p. 94), the regeneration being in excess of the destruction. In the pathological state, however, destruction is in excess of regeneration; and when the irritation "does not lead to complete death of the whole or part of the organism, necessarily, from that combination of circumstances, there follows what we describe under the name of inflammation." According to Kassowitz, then, the essential

character of the rachitic process is an inflammation, the pathological irritation only differing from the physiological in the intensity of its action (p. 95). Under these conditions we should expect that not only "unhealthy cells," or irritative substances in the blood (toxins), with normal cells, but also an abnormal constitution of the blood, continued over a longer or shorter period of time, according to the degree of variation from the normal, or importance of the defaulting substance, would sooner or later give rise to evidences of "pathological irritation." The changes in rachitic bone have been carefully described by numerous writers. Rindfleisch pointed out that the swellings at the ends of the long bones are formed by what he terms an "intermediate substance" derived from the cartilage. Kassowitz showed that the chief part of this enlargement is occupied by the zone of growing cells; "the layer of cartilage, in which the cells are arranged in linear series, instead of being half a line, is from a quarter to half an inch in breadth" (Jenner). In addition, the calcification of the cartilage cells and matrix, the formation and distribution of fresh marrow spaces, the absorption of old bone and the deposition of new, instead of following an orderly and regular sequence, take place very irregularly. According to Kassowitz, all these occurrences are dependent on previous changes in the vascular system, of the nature of an abnormal fulness of the blood vessels, with increased formation of new vessels. It is these vascular changes which constitute the evidence that rickets is a chronic inflammatory process.

Kassowitz[1] brings forward evidence showing that simple hyperæmia, or increased supply of nutriment, leads to an increased growth of cartilage, with an increased absorption of old bone, accompanied by an increased deposition of new bone, *i.e.* to excessive growth. With rickets, however, the increased deposition of new bone is replaced by a delayed ossification, a condition which only occurs when there is increased formation of new vessels. It is thus evident that a further factor than hyperæmia is necessary for the institution of the inflammatory process, and the question arises, can a defective nutrition supply this factor?

Kassowitz[2] has shown that the direct action of a toxic agent, such as particles of phosphorus, in the circulating blood can produce changes in the ossifying tissues in growing animals analogous to those which are found in histological pictures of bones affected by rickets. But, more important still, he has demonstrated a similar effect as the result of inanition.

By keeping very young animals for some days without any food, he observed changes in the growing ends of bones "which in many respects have a great similarity to the pictures of rickets and the effects of larger doses of phosphorus." The changes consisted of an enormous dilatation, with an increase in number of the blood vessels, accompanied by an accelerated absorption of bone and cartilage.

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[1] Bd. ii. Abth. 2, S. 19.

[2] P. 97.

In a similar manner, by the artificial withdrawal of blood from a limb in a growing animal, he showed that a local inanition is capable of inducing an inflammatory state in the growing parts of the bones of that extremity.

In these circumstances there can be no question of the direct action of a toxin. The requisite factor can evidently be supplied by the negative phase of absence or deficiency of nutritive supply; and it is only reasonable to conclude that if the supply of nutrition as a whole can exert this effect, then the continued deficiency of any of its parts (fats or albumins from digestion, inefficient oxidation, etc.) will exert a similar influence. It seems to me that the position is admirably summarised by Kassowitz.[1] According to him, "a general withdrawal of nutrition, as well as the cutting off of the nutritive supply to a portion of the growing organism, can in a short time give rise to a well-marked inflammatory state at the growing parts of the bone. From these two important facts, then, the causal connection between a large group of injurious conditions capable of producing rickets, and the anatomically demonstrable inflammatory changes at the growing portions of the bones is made perfectly clear. Thus a quantitative or qualitative defect in nutrition, continued over a long time, will be able ultimately to produce the same, or a similar, effect that a general or local withdrawal of nutrition can bring forth in a few days. The continued giving of the wrong kind of food, as also every faulty chemical process of digestion and metabolism, will show itself during the time of active growth in an abnormal condition of the newly formed tissues, and will manifest itself in the whole body by an appearance of illness, by insufficient increase in weight, and by a greater vulnerability of the affected individual, and of his individual tissues and organs. At those ends of the bones, however, in which a very energetic growth is taking place, and where, therefore, a faultily built and consequently less resistant tissue is produced in greater extent, this vulnerability of the young tissue, and especially of the loose and unstable structure of the walls of the young blood vessels, will very readily lead to those inflammatory antecedents and their consequents which we define as rickets."

The bearing of this view of the etiology of rickets upon the therapeutic measures to be adopted is too evident to require detailed consideration.

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[1] P. 98.

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THE RELIEF OF RESPIRATORY EMBARRASSMENT IN MALIGNANT GOITRE.

By Alexis Thomson, F.R.C.S.Ed., *Assistant Surgeon to Edinburgh Royal Infirmary.*

The embarrassment of respiration which frequently attends the later stages of malignant disease of the thyroid is one of the most critical conditions for which the aid of the surgeon may be invoked. That this is not a common occurrence may partly explain the uncertainty of surgical teaching with regard to the measures which should be employed for its relief. My own experience, although limited to two cases, may prove of service to others by calling attention to an alternative method of overcoming the difficulties which are encountered.

If we consider in the first place the condition of the trachea, we find that up to a certain stage the alterations in the air passage depend rather upon the size and distribution of the goitre than upon its innocent or malignant properties. The trachea is displaced and bent or curved, usually to one side; at the same time it is compressed, it may be circularly, so that it presents an annular or tubular stenosis, it may be from before backwards; more frequently it is compressed from side to side, so that it acquires the shape of a scabbard. The rings of cartilage, which contribute so much to the integrity of its lumen, become softened as a result of continuous pressure, and the trachea, losing its consistence, yields more readily to the compressing force. During life the stenosis of the trachea is aggravated by the œdematous and congestive swelling of its mucous membrane, and the lumen is partly occupied by an abundant frothy mucus, derived not only from its own glands, but from those of the lower air passages. In a small proportion of cases the tumour tissue infiltrates the wall of the trachea, and may finally make its way through the mucous membrane and project into the lumen. Septic complications may also supervene in the cellular tissue of the neck or in relation to the tumour itself, sometimes as a result of invasion and perforation of the gullet, and still further embarrass the respiratory functions.

If the tumour extend down into the thorax,—the malignant variety of retro-sternal or intra-thoracic goitre,—the displacement and compression of the trachea may be still more pronounced and the stenosis greater, because of the rigid and unyielding character of the structures bounding the upper opening of the thorax.

Under such circumstances the condition of the patient is pitiable in the extreme. He is unable to lie down or sleep. His nights are passed in a sitting posture in the agony of impending suffocation. At frequent intervals there are violent paroxysms of coughing, which are followed by abundant perspiration and exhaustion. The paroxysms are most marked in intra-thoracic goitre, and during the paroxysm the tumour may be displaced upwards, compressing more forcibly the innominate veins and their tributaries, so that the veins of the neck, and particularly the anterior jugular veins, become enormously distended. Death may take place suddenly from asphyxia, from heart failure, or from displacement of a thrombus from one of the veins in the neck.

The history of the case and the signs observed on examination render the diagnosis one of little difficulty. The patient is able to speak, except in the rare cases in which the recurrent nerves have become paralysed. The tumour in the neck, if primarily malignant, is of recent development; if it is of long standing, there has been a rapid increase in size corresponding to the malignant transformation of an innocent goitre. It is fixed and matted to its surroundings, and exhibits comparatively little movement on swallowing. It usually extends across the middle line from the lobe in which it originated, displacing the trachea and frequently overlapping it, so as to bury the air passage completely. If the tumour tissue has actually penetrated into the trachea, the expectoration is usually tinged with blood. Dysphagia is rarely a prominent symptom; it is due to the backward extension of a goitre compressing and narrowing the gullet, or disturbing the nerve mechanism of deglutition.

The existence of a retro-sternal goitre may be inferred from the fact that the respiratory embarrassment is greater than is accounted for by the palpable tumour in the neck; that the trachea, when capable of being located, is displaced to one side out of proportion to the size of the cervical goitre; that the anterior jugular and other veins in the neck, and sometimes those in the arm, are distended; and, finally, that during the paroxysmal attacks of coughing, the tumour may be observed to present at the upper opening of the thorax. Unless the retro-sternal tumour is of considerable size, the percussion note does not yield reliable data, and it is rarely practicable to have recourse to an examination with the Röntgen rays.

The surgeon is usually called in when the condition is urgent and critical, and having made a diagnosis, it is his duty to do something which will relieve the patient from the distress and agony of impending suffocation. How is this to be achieved? Either by performing a direct tracheotomy, or by removing as much of the tumour as will liberate the trachea from pressure; should this not prove efficacious, the air passage will be so freely exposed that the insertion of a tube can be carried out with ease and precision.

The first of these alternatives—tracheotomy—is that usually had recourse to; it is always hazardous, and it is not too much to say that it may prove a very difficult or even an impossible undertaking. When the trachea is buried beneath the goitre, its location is uncertain, and the surgeon is handicapped from the outset. He proceeds to open up the superficial tissues over the presumed line of the air passage, and splits the goitre in the same line by means of the thermo-cautery. When the trachea is exposed, it may be so compressed that the introduction of an efficient tube is not an easy matter, while the after-treatment, complicated as it may be by cellulitis and by fungation of the tumour, is not devoid of difficulty or anxiety.

The second of the two alternatives has the merit of greater certainty and accuracy. The soft parts overlying the goitre are separated, after free division of the integument, by one or other of the incisions usually employed in thyroidectomy. The surgeon then proceeds to the rapid removal of the growth, or as much of it as will free the air passage from pressure. Failing this, the trachea will have been made so accessible that the insertion of an efficient tube is rendered an easy and deliberate undertaking. I shall best illustrate the procedure recommended by narrating two cases which were under my care in the summer and autumn of 1903.

Case 1.—*Malignant retro-sternal and cervical goitre.*—The patient, a postman, æt. 29, had not suffered from any previous ailment, with the exception of a small tumour in the left popliteal space, which was removed in the Dundee Royal Infirmary in 1899. Two months before I saw him he began to suffer from cough and hoarseness, and a month later he found his collar becoming unduly tight. A tumour in the neck was discovered, but because of its fixation and presumably malignant character the question of its removal was decided in the negative.

I saw him for the first time at his home in Cupar in consultation with Dr. Douglas on the afternoon of Tuesday the 28th April 1903. Symptoms of pressure upon the trachea had developed with greater rapidity than could be accounted for by the increase in size of the cervical tumour. He was in bed, propped up with pillows into a half-sitting position, breathing with difficulty, and seized at frequent intervals with violent paroxysms of coughing. During the paroxysms he sat bolt upright, extended his neck, and after much effort, during which the veins of the neck became greatly overdistended, he brought up a little frothy mucus. He swallowed without difficulty, and his speech was low but quite distinct. He had had practically no sleep for three weeks. On the left side of the neck was a rounded, flattened tumour, obviously in the position of the left lobe of the thyroid and about the size of a Tangerine orange; its characters were obscured by the fixation and matting of the overlying soft parts. The isthmus and right lobe of the thyroid were enlarged to the extent of being easily palpable. The trachea was very markedly displaced to the right, more so than was accounted for by the cervical enlargement of the left lobe of the thyroid; this, together with the character of the breathing and the great distension of the anterior jugular veins, suggested the presence of a retro-sternal prolongation of the left lobe, presumably of the same malignant character as the enlargement in the neck. It was urgently represented to me that he must be relieved at all risks. The patient himself was fully aware of his critical condition, and said he would sooner take his chance of dying on the table than pass through another night of the agony caused by impending suffocation. I proposed to attempt the removal of the tumour under local anæsthesia. The first difficulty lay in the attitude of the patient, for it was impossible to alter this from the half-sitting posture, and at frequent intervals our manipulations were interrupted by violent paroxysms of coughing, during which the anterior jugular veins became enormously distended. The first objective was to divide the isthmus of the thyroid. An angular incision was made from the left great cornu of the hyoid bone to the suprasternal notch, both anterior jugular veins were clamped and cut across, the deep fascia was opened up, and the sternal portion of the sterno-mastoid, the sterno-hyoid and thyroid muscles were divided. The isthmus, which was now exposed, was thickened but not invaded by tumour tissue; its division was followed by such relief of the respiratory embarrassment that he was now able to recline upon the pillows. The tumour of the left lobe was then defined; it was of a yellowish white colour, firm and fibrous in consistence, and fixed to the adjacent structures. The attempt was first made to enucleate the retro-sternal prolongation of the tumour, as this was mainly responsible for the compression of the trachea. The forefinger was passed along the tumour into the upper opening of the thorax, when the connections to the surrounding tissues were separated comparatively easily, but it was only at the third attempt, and with the help of a violent cough by the patient at my request, that the finger could be hooked round the lower pole of the tumour, which was thus projected from the wound in the neck. The trachea, now freely exposed, was markedly flattened from side to side. The respiration being quite free from embarrassment, I was able to proceed with deliberation to the enucleation of the cervical portion of the tumour. This was accomplished without injury to the recurrent laryngeal nerve, the patient counting up to one hundred while I was dissecting in the line of its course; but in clipping away a portion of the growth which had spread behind the trachea I made a small opening in the œsophagus, from which saliva escaped the next time the patient swallowed. I was unable to find the opening with the means of illumination at our disposal, so was obliged to fall back on packing the wound with gauze. The patient, when put back to bed, was able to lie comfortably on his back, completely relieved of the respiratory embarrassment, and he enjoyed a night's sleep, the first for several weeks.

The tumour proved on examination to be a small spindle-celled sarcoma, so no hope was entertained of immunity from recurrence. He regained health sufficiently to be able to be out every day, but within a month of the operation there appeared a small fungating growth in the wound. On the 8th of June I was again sent for because of increasing difficulty in breathing. He was obliged to sit up in bed, but the dyspnœa was not so urgent as on the previous occasion, and the paroxysms of coughing had not returned. There was a projecting tumour in the lower part of the neck the size of a Tangerine orange. The trachea was displaced to the right, but was so easily felt that no difficulty was anticipated in exposing it. Chloroform was administered at the patient's request, and I exposed and opened the trachea above the sternum and to the right of the middle line. An ordinary full-sized trachea tube was inserted without relief. The silver tube was withdrawn and a rubber drainage tube was passed down the trachea for 6 in., but, as it was at once blocked with secretion, it had also to be withdrawn. I had fortunately provided myself with a portion of leaden pipe, such as is used by gasfitters, with a lumen of 11 mm. in diameter; having curved it so as to form one-fourth segment of a circle, I passed it down for 6 in., when a large quantity of blood-stained frothy mucus was expelled, and the respiration at once became easy and noiseless. The anæsthesia terminated in a sound, normal sleep in the attitude of complete recumbency. The remaining two weeks of life were passed in comparative comfort. There being no further embarrassment of breathing, he was able to lie down during the night and sleep. Death took place quite suddenly from secondary hæmorrhage; blood suddenly poured from the tube, being derived apparently from one of the large vessels at the root of the neck.

Thus terminated one of the most urgent and difficult cases I have been called upon to treat; the relief of the intolerable dyspnœa upon two occasions, although not averting the final and inevitable result, was regarded by the patient and his family as an inestimable benefit.

Case 2.—The second case was that of a *malignant cervical goitre.* The patient, a married woman, æt. 54, was admitted on the 15th June 1903 to Professor Chiene's Wards in the Royal Infirmary, on the recommendation of Dr. M'Donald Robertson. A swelling had appeared on the right side of the neck three weeks before, but had caused no inconvenience. It was firm, solid, and painless, and had evidently originated in the right lobe of the thyroid; it extended about 1 inch across the middle line in the situation of the isthmus, and it extended downwards as far as the episternal notch. No interference was recommended. She was readmitted on the 7th of August, complaining of attacks of breathlessness which necessitated her sitting up in bed night and day. Her voice was reduced to a whisper, and the tumour in the neck had undergone a considerable increase in size. It now involves the left lobe as well as the right, it extends downwards behind the manubrium sterni, and it has become so fixed that it scarcely moves on swallowing. It was impossible to make out the position of the trachea, so I decided to shell out the tumour to such an extent as would afford satisfactory access to the air passage. This was done on the 7th August 1903. The head and upper part of the trunk were raised on pillows, and chloroform was administered at her own request. A horizontal or "collar" incision was made over the most prominent part of the goitre, and the tumour freely exposed after division of the large superficial veins, the deep fascia, and the depressor muscles of the hyoid. The trachea could not be located. The capsule of the goitre was freely incised, and large masses of the growth were shelled out rapidly by means of the fingers aided by a large curved periosteum elevator. The bleeding was inconsiderable, and was easily arrested by a large plug of gauze saturated with adrenalin chloride. On removing the gauze plug after an interval of two or three minutes, the trachea was readily seen in the depths of the wound; it was displaced to the left, and markedly flattened from side to side. The breathing had now become quite natural. The trachea was opened without any haste or difficulty, and a long and wide silver trachea-tube inserted; the remainder of the wound was lightly packed with gauze, and she was sent back to bed, sleeping quietly in the position of complete recumbency.

The exact nature of the tumour was not ascertained, but there was, unfortunately, no doubt of its malignant characters. She gradually lost strength, and died three months after the operation; there was no return of respiratory embarrassment or other local complication.

It will be observed from a perusal of these cases that difficulty may arise at the outset from the attitude of the patient. I need not labour the point that the sitting posture, with the repeated disturbance arising from paroxysms of coughing, does not favour the performance of a difficult operation at the root of the neck. One must work away as best one can with such encouragement as is afforded by the knowledge that when the isthmus has been cut across, or a considerable part of the growth shelled out, the patient will probably be able to lie down and remain quiet, thus permitting of the further manipulations being carried out under more favourable auspices.

With regard to the choice between local and general anæsthesia, the former is to be preferred not only because of the greater safety, but because the patient if conscious may be able to afford assistance at certain steps of the operation. In the case of retro-sternal goitre, the patient by coughing forcibly when asked to do so, enabled me to deliver the lower pole of the tumour from the upper opening of the thorax. At the same time I should not refuse a general anæsthetic in the case of a nervous patient, who is prepared to accept the additional risk which its administration implies.

I find on looking into the literature of the subject, that Kocher, in the fourth edition of his work on "Operative Surgery," also recommends the procedure described under the term "exenteration," and states that it may with advantage take the place of tracheotomy in the case of soft malignant growths of the thyroid; and in conversation with Dr. Anschütz, first assistant with Mikulicz, I have learned that this surgeon also practises the procedure I have ventured to recommend as a result of my own comparatively limited experience.

THE LIMITATIONS OF LOCAL ANÆSTHESIA.

By ALEXANDER MILES, F.R.C.S.Ed., *Lecturer on Surgery, School of Medicine, Edinburgh.*

MAN'S natural inclination to strive after some new thing and to seek out many inventions is in no wise abated. In the domain of medicine, no less than in other fields of human activity, every day brings forth its novelty, and there seems little risk of any innovation being allowed to perish for lack of patronage. The modern tendency is rather to admire novelty for its own sake, and to allow the glamour of the new invention to obscure the proved qualities of that which it is designed to displace. Not only so, but there is a real danger that the new thing itself, and particularly if it happens at the same time to be a good thing, shall be done to death. In medical and surgical practice examples of this tendency are not far to seek; and the measure of success which attends the inception of any procedure, be it prophylactic, diagnostic, or therapeutic, seems but the index of the excess to which its application will be exploited. A drug, a serum, a particular form of electric energy, or a surgical operation which, on its introduction, yields satisfactory results, is ere long employed to meet indications, not only different from those which originally prompted its use, but often diametrically opposed to them. This natural desire to widen the sphere of usefulness of that which is both new and good is not without its ultimate advantages, but it involves the immediate drawback that the special virtues of the new thing are apt to be buried and lost sight of in the heap of débris which soon accumulates about it. Doubtless that which is good in it will ultimately be recovered, but it may be long ere it regains its lost credit.

Among the most valuable of the additions made to the surgeon's resources within recent years must be counted his power of inducing anæsthesia of a given region of the body by the local injection of cocaine or one of its substitutes: and the increased efficiency and safety of these drugs when they are combined with one or other of the many preparations of suprarenal extract, have rendered this measure one of great practical utility.

Signs are not wanting, however, that this valuable procedure is in danger of being pushed beyond its natural and legitimate bounds. The employment of "local anæsthesia" is in some quarters being made a fetich, and operations are being performed with its aid which would be carried out with greater efficiency and with equal safety under the influence of a general anæsthetic.

In the current number of the "Annals of Surgery" (February, 1905) there appears a paper, by Dr. John A. Sampson, on "Operations on the Lower Ends of the Ureters by the Inguinal Extra-Peritoneal Route under Local Anæsthesia (Cocaine)," which furnishes us with an illustration of the extent to which this procedure is being carried. Lest we be misunderstood, we hasten to say that for the purely surgical aspects of this contribution we have nothing but admiration. It is a record of four exceedingly difficult and delicate operations brought to a successful issue largely by the forethought and skill of the operator.

Nor would we for a moment question Dr. Sampson's wisdom in electing to perform these operations under local rather than under general anæsthesia. In each of the cases he adopted the local method deliberately, as he considered that the condition of his patients contra-indicated the use of a general anæsthetic; and we fully realise that with the operator, and with the operator alone, must rest the selection of the anæsthetic, as on him, and on him alone, shall lie the responsibility for what may happen while the patient is under its influence.

Case 1.—The first case reported is that of a woman, æt. 42, on whom Dr. Sampson resected the lower end of the right ureter and implanted it in the bladder for inefficiency of the ureteral orifice. The functional result of this operation was so satisfactory that, two months later, he performed a similar operation on the left ureter, the orifice of which was also inefficient. The first operation lasted from 9 a.m. till 2.15 p.m.—five hours and a quarter; and the second lasted five hours and twenty-five minutes.

Case 2.—The second case was that of a woman, æt. 48, operated on for the cure of a uretero-vaginal fistula, the operation lasting six hours and ten minutes.

Case 3.—The third patient was a girl, æt. 19, from whose ureter Dr. Sampson removed a calculus, by an operation which lasted five hours and forty minutes.

Schleich's cocaine solution (without the addition of adrenalin) was employed in all the cases, and, as the effects were practically the same throughout the series, to avoid repetition we may cite them together. The incision of the abdominal wall down to the peritoneum seems, for all practical purposes, to have been painless. Although the deep epigastric vessels and the round ligament were cocainised separately, before being clamped and ligatured, it is noted that in one case both these structures seemed to be sensitive to pain. In one case, after being exposed, the ureter was cocainised and cut across, apparently without pain; but in another case the ureter proved insensitive, even when not specially cocainised. It was observed in all the cases that any procedure which made traction on the parietal peritoneum caused pain,—such, for example, as the separation of the peritoneum from the sides of the pelvis, traction on the ureter and freeing it from adhesions,—and the "infiltration of the sub-peritoneal tissue with Schleich's solution seemed to help but very little." Unless done very carefully, even the holding aside of the freed peritoneum caused pain, "and any change in the exposure had to be done slowly and gradually, to avoid unnecessary pain." Pushing out the bladder caused pain, and making the incision in its walls was painful in one case, but painless in another. In all the four cases it is noted that the closing of the abdominal wound was the most painful step.

In referring to the general effect of these prolonged operations on the patients, the author says, "it is that of hard muscular exercise," and that, "aside from the fatigue, the general condition of the patient was the same after as before the operation." "The convalescence," he adds, "was as rapid as might be expected in one recovering from the effect of several hours' hard work, or from a long time spent in a dentist's chair." We confess to a certain haziness as to what is meant by "convalescence from several hours' hard work"; and we do not trace clearly the parallel between an intra-pelvic operation and what happens while we occupy the dentist's chair. The author admits that, for the patient, "the position, no matter how comfortable, becomes tiresome," and that "she frequently changes her position." He further explains that "she does actual muscular work in grasping something with her hands, or bracing her feet against some support." We can well believe him that "these procedures help the patient," but we feel sure that they must be the reverse of helpful to the surgeon in his endeavours to manipulate the structures in the inmost recesses of the pelvis.

Dr. Sampson's observations on the relative sensitiveness of the different tissues are most interesting, and, did they not merely confirm Lennander's work, would have been most valuable. We venture to suggest, however, that it is a misuse of terms to speak of these operations as having been performed "under anæsthesia."

The quotations we have made from the reports show that in all the cases certain steps of the operation were distinctly painful. When we consider the inevitable difficulty of gaining access to the depths of the pelvis when the patient is straining her muscles in the way described, and the unavoidable dragging and pushing on the parietal peritoneum and on the structures attached to it which such operations entail, it is evident that they must have been far from painless. Nor can we believe that to lie on an operating-table for between five and six hours, in the full consciousness that a difficult and dangerous operation is being performed on one, can be anything else than a painful experience.

The author's "conclusions" regarding the relative merits of local and general anæsthesia are too long to quote at length. We feel, however, that he is hard put to it to find arguments to support him in preferring the local method in such cases as are here recorded. All that he can say regarding "the disadvantages in the use of a general anæsthetic" is (1) that "in certain cases it is contra-indicated." (This, we submit, is not a disadvantage in its use, but a reason for not using it.) (2) "A small percentage of cases die on the table." Admitted; but death from cocaine is not unknown. (3) "It lowers the general resistance of the patient. . . ." Not more, we should think, than five and a half hours' handling without anæsthesia; and (4) "the taking of the anæsthetic is usually very unpleasant, and the recovery from it still more so." Pleasantness is, after all, a relative thing, and we confess that the author's description of his operations does not leave on our minds the impression that the patient's condition was one of pleasure unalloyed.

It must be added that Dr. Sampson admits that the unconscious condition of the patient and the complete muscular relaxation under a general anæsthetic render the operation easier and speedier, and enable the surgeon *to do better work* than is possible under local anæsthesia. The words we have italicised seem to us to contain the crux of the whole matter—the quality of the work.

Let us state once again that it is not our object to disparage or to discourage the use of local anæsthesia within its natural and legitimate sphere, but rather to sound a warning against its being brought into discredit by surgeons asking more of it than it can reasonably be expected to give. Further, we would like to say that it is in no captious spirit that we make the paper before us the occasion for these remarks, but rather because the details as to the effects of the anæsthetic are there set forth with unusual fulness and candour.

DOYEN ON THE ETIOLOGY AND TREATMENT OF CANCER.

A Resumé by Alexis Thomson, F.R.C.S.Ed., *Assistant Surgeon, Edinburgh Royal Infirmary.*

(Plate XX.)

It is Doyen's contention that it will be possible to vaccinate against cancer with the same success as that which attends vaccination against smallpox. It is our object in the present article to lay before our readers the observations upon which this contention is based.

Doyen is an out-and-out believer in the bacterial origin of tumours. It is his view that the cells of the body multiply under the irritant action of a micro-organism in the same way as the cells of the embryo under the influence of the spermatozoon, and that the evolution of tumours does not sensibly differ from certain inflammatory lesions, such as those of tuberculosis or actinomycosis. The benignity or malignity of a tumour depends on the reciprocal reaction between the microbe and the cells of which it is composed. Every benign tumour contains latent organisms, organisms which are held in check by the tissues; at any time the organisms may obtain the upper hand, with the result that the innocent tumour becomes a malignant one.

It was in his private laboratory at Rheims, in 1885, that he made his first observations on the organism to which, in 1901, he gave the name *Micrococcus neoformans,* and he has been demonstrating and cultivating it ever since. From time to time he has submitted his observations to the French Academy, to the Surgical Congress at Berlin, and to the International Congresses at Moscow and at Madrid.

The *Micrococcus neoformans* does not stain with ordinary reagents, but does so readily with a special fluid, of which the formula is given. It is easily cultivated, the most favourable medium being a bouillon of lactating cow's udder, with peptone and glucose added in the proportion of one per cent. It is a characteristic feature that growth does not appear till after the lapse of eighteen hours or more (Plate XX.).

The virulence of the culture can be increased by passing it through animals, such as the rabbit, guinea-pig, white rat or white mouse; or it can be attenuated, by the addition to the culture medium of hydrochlorate of quinine, or by exposing it to an elevated temperature.

Distribution of the cocci.—The cocci are found in all varieties of tumour, both in those of connective tissue and of epithelial origin. They are readily found in the juice of any cancer, both in the fluid and in the degenerated epithelial cells. They are also found in fresh sections, but with greater difficulty, because of their small number in any given section. They are best seen in fresh nodules of secondary cancer, and especially those in the omentum. The coccus presents the same characters, whether obtained from primary or secondary growths. The more malignant the tumour, the larger is the number of cultures that can be obtained from it. The centre of the primary tumour rarely yields a positive culture, an observation which agrees with the tendency, so frequently shown, of the primary tumour to remain stationary—witness, for example, the common scirrhus cancer of the breast. The cocci are best found in the most outlying lymphatic glands and the most distant secondary growths. They have been found in swollen congested glands before the appearance of cancer cells in them. The tumours which most readily yield positive cultures show the most marked tendency to recur after removal by operation.

The cocci are found in the lymphatics in cases of cancerous lymphangitis (cancerous pseudo-erysipelas), and in the discharge from the nipple in certain cases of cancer of the breast. Doyen lays stress on the fact that he found the coccus in the discharge from the nipple in a woman who was not the subject of cancer, and believes that in such a case only a trauma would be needed in order to determine the evolution of a tumour. The cocci enter the human body by the usual channels of bacterial infection.

In a more recent communication it is announced that the *Micrococcus neoformans* has also been observed by MM. Metchnikoff, Tuffier, Thyrolois, Mottet, and Jacelet.

Experimental observations.—In view of the failure to produce typhoid and cholera in animals by the inoculation of their respective bacilli, it appears to Doyen to be an exaggerated contention to insist that inoculation of the *Micrococcus neoformans* should yield positive results in order to prove its causal relationship to cancer. He believes, however, that the micrococcus causes the malignant tumours met with in the lower animals, and he has demonstrated its presence in mammary tumours in the dog and in the cat.

If an active culture be injected into the testicle of a guinea-pig, there follows an intense reaction in the epithelial cells of the seminal tubules; the cells multiply and play the part of phagocytes, as a result of which the cocci rapidly lose their staining properties and their capacity of reproducing themselves in culture media. It is regarded as characteristic that the *rôle* of phagocytes is fulfilled by the epithelial cells and not by the leucocytes.

Among the positive results of inoculations in animals the following are worthy of mention. (1) A white mouse, inoculated under the skin of the back, died six months later of intestinal obstruction, caused by a tumour of the transverse colon. (2) A monkey, inoculated into the substance of the mamma, developed, three months later, a tumour in the same organ; the tumour presented the characters of a cystic adenoma, like that met with in the human subject, and the fluid obtained from the tumour yielded a pure culture of the *Micrococcus neoformans.* (3) A white mouse, inoculated under the skin of the back with a culture derived from a sarcoma of the tonsil in the human subject, died ten and a half months later of intestinal obstruction, due to a tumour of the colon. (4) A guinea-pig, inoculated into the substance of the mamma, died two months later, and after death a cylindrical adenoma was found in the liver. (5) A white rat developed multiple nodules of lympho-sarcoma of the testicle five months after inoculation. And (6) a white rat developed a fibro-sarcoma of the Fallopian tube.

The treatment of cancer.—In 1901 Doyen commenced to experiment with the toxins and vaccines of the *Micrococcus neoformans* in cases of cancer in the human subject, following the lines devised by Pasteur in vaccinating against hydrophobia, and against pleuro-pneumonia in cattle.

In order to obtain toxins of the desired quality, the cultures must be continued for from two and a half to three years, during which period the most minute precautions are necessary. Several strengths of toxin are employed—(1) An active toxin, obtained from a culture of twelve to eighteen months old, which is then filtered and exposed for four days to a temperature of 50° C. in order to kill all the microbes. (2) An attenuated toxin, prepared by adding to a culture 7 per cent. of hydrochlorate of quinine, 2 per cent. cacodylic acid, and 2 per cent. methyll-arsenic acid; the mixture is left in the incubator for five days, at a temperature of 37° C., and is then filtered.

In the preparation of the vaccines, cultures of from two and a half to three years old, and modified as described above, are inoculated in tubes of bouillon and kept in the incubator for ten to twelve months. A feeble vaccine is prepared by submitting the culture to a temperature of 45° C. for two days, and a stronger vaccine by submitting it to a temperature of 40° C. for some time.

The *vaccines* are obtained by the injection of cultures thus obtained into the horse; after repeated injections during a period of ten months, an active serum is available for the treatment of cancer.

In cancerous subjects the injection of the serum, which is preferably made into the buttock, is followed by a reaction like that observed after the injection of tuberculin in tuberculous subjects.

The results already obtained in Doyen's hands are sufficiently remarkable. During the first two or three weeks of the serum treatment, tumours which were previously inoperable undergo visible and tangible improvement; tumours which were adherent to the deeper tissues become mobile,—in some cases to such a degree as to become "operable,"—and an operation can then be performed under favourable conditions. In a series of cases which were regarded as hopeless a certain number have been rid of any discoverable trace of cancer, and may be regarded as "cures"; in others the disease has been arrested.

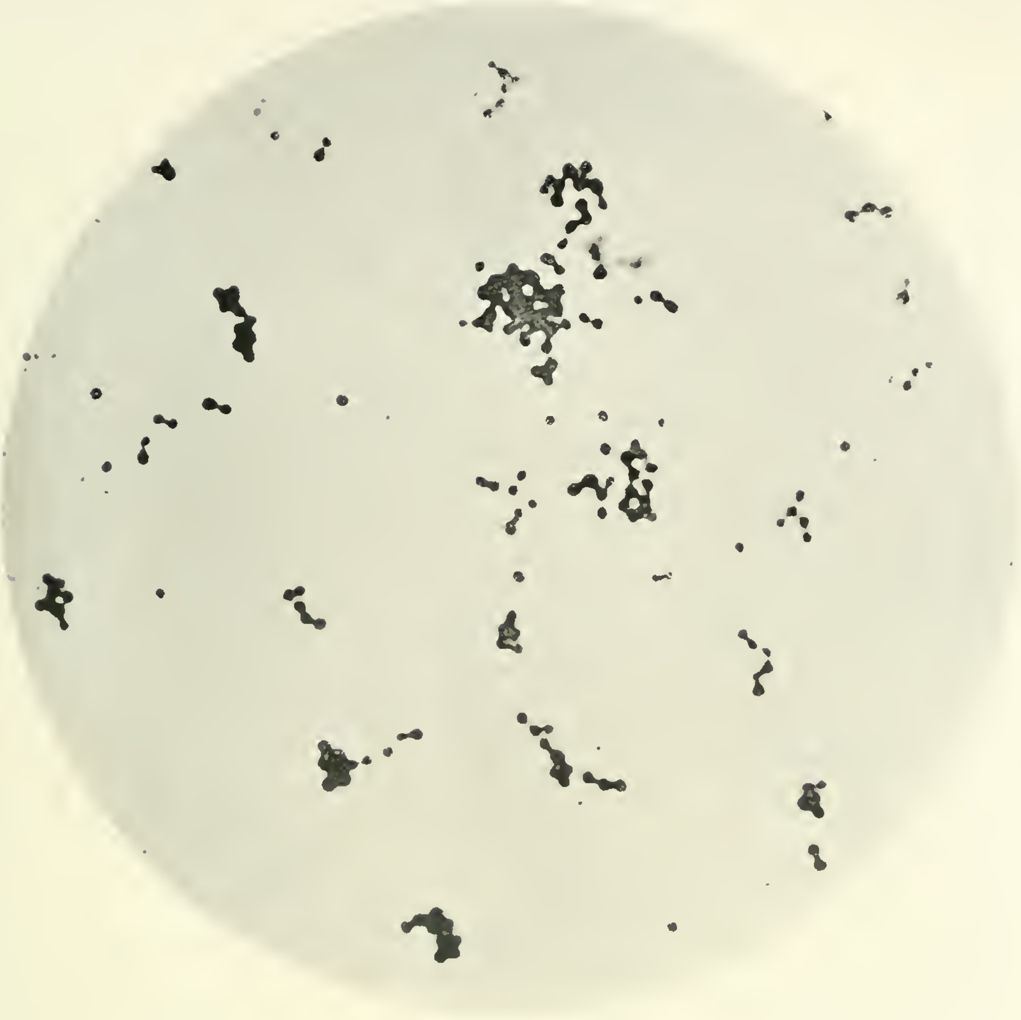
It should be clearly stated that Doyen firmly believes in the cure of cancer by operation, provided this be carried beyond the limits of the existing infection. It is where this is impossible that the aid of serum-therapy must be called in. Without it the incomplete removal of the disease by the knife or curette would inevitably be followed by recurrence; but the serum, by increasing the resistance of the tissues, enables them to get the upper hand of what remains of the cancer. The less left to be dealt with by the tissues, the more likely is the immunity from recurrence.

From the clinical standpoint, cases of cancer are divided by Doyen into five groups—

1. Superficial cancers of the skin without glanular infection; these may be got rid of by timeous incision, by the application of escharotics, or by the action of the X-rays, but a permanent cure is best obtained by vaccination with the anti-cancerous serum, as this alone will assure immunity after the operation.

2. Early cancers of mucous surfaces, of glands, and of internal organs,—that is, those which are still limited, mobile, and without extensive lymphatic involvement,—should be subjected to operation; but even in favourable cases a permanent cure cannot be guaranteed. It is recommended, therefore, that the anti-cancerous serum should be exhibited for one or two weeks before the operation.

3. Progressive cancers which have become inoperable because they are too extensive for complete removal. These cases probably demonstrate the beneficial results of the serum-therapy better than any others. Take, for example, a large cancer of the breast, fixed to the thorax, the overlying skin like that of an orange and studded with cancerous nodules; such cases are universally regarded as inoperable, but, after six or eight injections, the tumour diminishes in size and becomes mobile, the skin loses its reddish tinge, and the cancerous nodules involute, so that at the end of three weeks or so a successful operation can be performed; skin may be used to cover in the wound, which before the serum treatment was definitely cancerous. Outlying nodules in the skin, if such exist, need not be excised, as they will disappear by injecting the serum directly into their substance. Similar changes are brought about by the serum in cases of immobile cancer of the cervix, with invasion of the fornices and broad ligaments; so that in a few weeks an operation can be performed under favourable auspices, either *per vaginam* or by laparotomy, *and there may be no recurrence, even in cases where the operation was manifestly incomplete!* It may be said of such cases,



why operate at all if the serum treatment is so efficacious? Because in cases of such gravity every possible means must be employed likely to contribute to a successful result. The anticancerous vaccination only acts on the spreading area of the disease, leaving the central mass intact, and the latter, being the seat of a latent infection, remains a menace for the future. The effects of the vaccination, which reduces the size of the tumour and renders it operable, must be combined with the benefits of the operation, which diminishes the total amount of infective material to be acted upon.

4. This group includes cancers of the skin *en cuirasse*, with conservation of good general health, which are inoperable because of the impossibility of completely removing the infected area of skin. Such cases should not be subjected to operation; but the serum treatment should be continued for several years, and should never be interrupted for a period long enough to allow of actual recurrence.

5. Cancers which have reached the stage of glandular and visceral dissemination, with cachexia and marked diminution of the vital powers, should be left severely alone. The serum treatment, like every other known method, is absolutely useless.

Results of treatment.—In the first series of 126 cases there are twenty-seven which may be regarded as cures, two have been lost sight of, eight are manifestly improving and promise to become cures, ten have not reported, and seventy-nine in which the treatment has been of no avail, a considerable number having died soon after the treatment was inaugurated.

In the second series, all of which have come under treatment since January 1904, there are twenty which may be regarded as cures, seven appear cured but still remain under observation, six are too recent to allow of any judgment to be passed on them, twenty-four have greatly improved, ten have not reported, and forty-nine are all hopeless cases, of which sixteen are known to have died.

Among the cases reported as cures in the first of the two series, and which have been under observation for as long as two or three years, there were many in which anything in the shape of operative treatment appeared impossible. Many of them had been pronounced by competent observers as absolutely hopeless, and several as having only a few months to live. In some the cure was brought about by the serum treatment alone; in others, in combination with operative interference, the latter being incomplete, inasmuch as tissues obviously infected with cancer were left behind. Even in such unfavourable cases there are several in which there has been no recurrence, even after an interval amounting to three and a half years. In the total of 242 observations, there are, at last report, no less than forty-two which may be regarded as cures; that is to say, they present no discoverable trace of cancer. The preparations removed by operation are preserved in Doyen's museum, and the microscopical sections are stored in his laboratory, and are available for examination by independent observers.

It is maintained by Doyen that such results as are here recorded are impossible of attainment by any other known method of treatment.

The ultimate aim of the serum treatment is not concerned with individuals who are already the subject of cancer, but the vaccination of individuals who are apparently in good health, with the object of rendering them immune to cancer, in the same way as they are vaccinated against smallpox.

We have deemed it expedient to give this summary of Doyen's observations because they are probably unknown to the majority of our readers, and we have refrained from any comment or criticism because his observations are at present being subjected to a searching inquiry. While, therefore, it is premature to pronounce on the value of Doyen's researches into the etiology and treatment of cancer, it is impossible to read his book without being deeply impressed with the originality and extraordinary industry of its talented author.

We take this opportunity of expressing our thanks to Dr. Barbour Simpson for placing at our disposal copies of Doyen's published work and papers, and for affording us an opportunity of watching the treatment by Doyen's serum of a series of cases at present under observation in Edinburgh.

SIR THOMAS BROWNE, KNT.[1]

By W. H. COUPLAND, L.R.C.P.Ed., *The Royal Albert Asylum for Idiots, Lancaster.*

IT is a very interesting study to compare the endings of books, and if the subject be considered, there will be found to be few that can claim to be in themselves things of beauty, few in which the unity of purpose, of character, and design are so combined, as in the ending of one of the books to which I wish to direct your attention this evening.

"Bless me in this life with but peace of my Conscience, command of my affections, the love of Thyself and my dearest friends, and I shall be happy enough to pity Cæsar. These are, O Lord, the humble desires of my most reasonable ambition, and all I dare call happiness on earth, wherein I set no rule or limit to Thy Hand or Providence. Dispose of me according to the wisdom of Thy pleasure: Thy will be done, though in my undoing." Thus ends one of the classics of our language, a book written by a member of our own profession, Sir Thomas Browne, whose writings stand out markedly among the literature of the Caroline period, and whose "Religio Medici" is the best known of all his works.

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[1] An address delivered at the annual meeting, January 1905, of the Lancaster Medical Book Club.

This year we will celebrate on 19th October the Tercentenary of his birth, for he was born in the parish of St. Michael, Cheapside, in 1605; and, living to the age of 77, he died at Norwich in 1682, having spent the last forty-five years there. He lived an active, but, considering the political atmosphere, a very peaceful life, as the "Religio Medici" records, which "to relate were not history but a piece of poetry, and would sound like a fable."

He himself has told us that the "Religio Medici" was composed for his private exercise and satisfaction, during a period of seven years in leisurable hours; and he further explains that it was published surreptitiously in 1642; that owing to transcription the copy was depraved, and so eventually he took the matter in hand himself. He continues the *apologia* for the book thus: "It was penned in such a place, and with such disadvantage that (I protest), from the first setting of pen unto paper, I had not the assistance of any good book, whereby to promote my invention, or relieve my memory; and therefore there might be many real lapses therein, which others might take notice of, and more than I suspected myself"; and further on he says, "There are many things to be taken in a soft and flexible sense, and not to be called unto the rigid test of reason. Lastly, all that is contained therein, is in submission unto maturer discernments." It has been stated that he wrote the book while at Shibden Hall in Halifax, but this cannot be so, for the owner of New Shibden Hall, Mr. Lister, himself an antiquary, kindly tells me that his stay there was but short. Old Shibden Hall is now pulled down.

Through their books there is great kinship possible with the dead, and Gibbon declared that he would not exchange it for the wealth of the Indies; and, still more forcibly, Archbishop Fénélon vowed, that if all the crowns of the kingdoms of the world were offered to him, in exchange for his love of reading, he would refuse them all; and Isaac Barrow, the renowned theologian and predecessor of Newton at Cambridge, said, some years after the publication of the "Religio Medici," that "those that love books will never want a faithful friend, a willing counsellor, a cheerful companion, or an effectual comforter": and I feel sure that he included our book in his description. "A book-lover can make bold with the best jewels they have in their treasury," said Sir William Waller in his "Divine Meditations" in 1680. The "Religio Medici" must be carefully read to enjoy its riches to the full, and it does not come within the category of the "lounging books" of Horace Walpole, but is rather one of the "old good books" of Lady Louisa Stuart, Walter Scott's great friend.

I only wish, in these few moments, to try and draw your more particular attention to the man and his works, thereby doing good to myself, for, as old Ennius wrote—

> "He that directs the wand'ring Traveller,
> Doth, as 'twere, light another's Torch by his own;
> Which gives him ne'er the less of Lights, for that
> It gave another."

Browne's history may be summed by stating that he went to Pembroke College, Oxford, then called Broadgate Hall, after having received a good education at Winchester School. He took his B.A. at Pembroke in 1626, and his M.A. on 11th June 1629, in his twenty-fourth year. At this time Oxford offered very poor facilities for the study of medicine, and the regulations for licence were crude and peculiar. Bishop Earle did not think much of the "meer dull Physitian," who "was sworn to Galen and Hippocrates, as University men to their statutes though they never saw them," and whose "discourse was all aphorisms." Robert Herrick stigmatised the "artlesse" doctor of this time as a man whose

> "Potion and his pill,
> Has or none or little skill,
> Meet for nothing, but to kill."

Indeed, it must be confessed that many of them, as Browne wrote in later years, were "nimble and conceited heads that never looked a degree beyond their nests, that tower and plume themselves on light attainments."

He practised in Oxfordshire for a time, and then he went to Ireland with his stepfather, Sir Th. Dutton, and from thence on to the Continent; he visited France, including Montpellier (then the most celebrated medical school of the world), Italy, Padua, and Holland, finishing up his medical studies at Leyden in 1633. During these travels, as we find he states in the "Religio Medici," he managed to pick up no less than six languages, to say nothing of numerous patois and dialects.

We next find him at Upper Shibden Hall, in Northowram in Halifax, then owned by a Mr. John Foxcroft; whilst here he became friendly with Dr. Power, afterwards a very well known physician of those parts, and with him for years kept up a correspondence, an important letter that Browne wrote to him in 1647 on the course of a medical curriculum being in the Sloane MSS. Power lived at New Hall, a timbered house at Elland, still existing, but, Mr. Lister says, much out of repair. The next removal was to Norwich, Browne having taken his M.D.Oxon., hon. caus., on 10th July of that year—1637. Here he became famous, and, as Whitefoot said, "he was much resorted to for his skill in physic"; during his life in the old cathedral city the Quakers unsuccessfully tried to induce him to join their sect, Samuel Duncan being the leader of the attack.

His works are numerous, and I can but mention the chief; most of his letters are not existing. The first book to appear and the best known is the "Religio Medici," whose issue was, he says in 1642, unbeknown to him, but this statement must have a pinch of salt added to it—it was written about the year 1635; for he says, "As yet I have not seen one revolution of Saturn, nor hath my pulse beat thirty years." Many foreign translations are known, and Browne especially mentions an Italian one of which Professor Lloyd Roberts tells me that no copy is extant; eventually, the Pope conferred honour on the book by putting it on the "Index Expurgatorius."

As Mrs. Godfrey said last year, in her most interesting book ("Social Life under the Stuarts"), the "Religio Medici" "has a peculiar interest, inasmuch as it reflects the traditional life of the period; he stands, as it were, holding with one hand to the traditional credulousness of the age which was passing, grasping with the other at the inquiring and scientific spirit of that which was crossing over the hills of time." As an instance of that credulity I might cite a story of Sir Kenelm Digby; this worthy man, as those interested in matters biographical will know, had much to do with the success of the "Religio Medici" on its publication, as he wrote a critique of it and a letter to Browne. Lady Fanshawe's "Memoirs" relate that, at a certain dinner-party much excellent discourse passed, and Digby had the lion's share; of the many stories that he told, the only one that the auditors disbelieved was the last one, in which he related that "Barnacles, a bird in Jersey, was first a shell-fish to appearance, and from that, sticking upon old wood, became in time a bird. After some consideration, they unanimously burst into laughter, believing it altogether false, and," quaintly adds her ladyship, "it was the only thing true he discoursed to them." One much wonders what the subjects of the other stories were, as the belief that barnacle geese came from a tree, that grew usually in the Orkney Islands, was very prevalent, and it is peculiar that they did not believe it. Gerard's "Herball" of 1636, emended by T. Johnson, apothecarye, relates that there is a small island in Lancashire, called the Pile of Foulders, where birds are hatched from shells attached to old wood.

The "Vulgar Errors," or, to give it its proper title, the "Pseudodoxia Epidemica, or Enquiries into many Received Tenets and Commonly Presumed Truths," was originally to be written in Latin, but appeared in folio, in English, in 1646. He apologises for having single-handed undertaken a work which well deserved "the conjunction of many heads"; his profession is at once an advantage and a hindrance, for physicians have not leisure to make "those infallible experiments and those assured determinations which the subject sometimes requireth." It indeed is a compendious treatise, or *syntagma*, and the mistakes in it, as Dr. Johnson said, were due to a "want of the philosophy of Boyle and Newton," and not to lack of industry.

There is the "Hydriotaphia," or "Urne-Buriall," a learned and beautiful work, whose ending raised this eulogy from Carlyle: "The conclusion of the essay on urn burial is absolutely beautiful: a still, elegiac mood, so soft, so deep, so solemn and tender, like the song of some departing saint flitting faint under the everlasting canopy of night; an echo of deepest meaning from the great and famous nations of the dead." In this book you will find evidence that he was one of the few people of that time who had read Dante's "Inferno."

In 1658 was issued the "Garden of Cyrus," the most fantastic of all his works; it mixes up profound botanical knowledge with much mysticism, and it appeared as an addendum to the "Urn Burial." Doubtless the name came from an English translation of "Artamene, ou Le Grand Cyrus," which appeared in ten volumes of ten parts each in 1653,[1] and which ponderous work Dorothy Osborne sent to her lover, Sir William Hamilton. In this garden the trees were arranged in fives, in the form of quincunxes (*i.e.* like pips on a playing-card), and, to use the words of Samuel Taylor Coleridge, Browne found "quincunxes in heaven above, quincunxes in earth below, and quincunxes in water beneath the earth; quincunxes in Deity, quincunxes in the mind of man, quincunxes in bones, in the optic nerves, in roots of trees, in leaves, in petals, in everything"—much as some of our modern writers are finding the conchoid of Nicomedes, or the logarithmic spiral, to be the true curve of Nature. One celebrated passage I may quote to you. He says (wishing to denote the lateness of the hour): "The quincunx of Heaven"—that is the little group of stars, the Hyades in the constellation Taurus—"runs low, and . . . to keep our eyes open longer were but to act our Antipodes; the huntsmen are up in America, and they are already past their first sleep in Persia." Time will not allow me to wander off to discuss the importance of the constellation Taurus in the eyes of the ancients, who associated the Hyades, or the *moist daughters*, as Spenser called them, with weather changes. In Ulysses, Tennyson said—

> "Through scudding drifts the rainy Hyades
> Vex'd the dim sea."

"What life! what fancy! what whimsicality! Was ever such a reason given for leaving one's book, and going to bed," is Coleridge's energetic comment on this passage from the "Garden of Cyrus."

Among his posthumous works a very important one was published by his eldest son, Dr. Edward Browne, in 1716; it is called the "Christian Morals." This son, afterwards physician to Charles II. and President of the College of Physicians in London, calls the book a sequel to the "Religio Medici"; it contains many pithy observations, opening with a curious sentence: "Tread softly and circumspectly in this funambulatory track and narrow path of Goodness." Dr. Johnson, who added a life and notes to the book in 1756, explains that *funambulatory* means "narrow, like the walk of a rope-dancer." Those who read Cowper's poem, "The Task," will see many traces of the influence of the "Christian Morals." I may quote two sentences from it, as conveying much wisdom: "Join sense unto reason, and experiment into speculation, and so give life to embryon truths, and verities yet in their chaos"; and, "Where true fortitude dwells, loyalty, bounty, friendship, and fidelity may be found."

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[1] This year saw the publication of the "Compleat Angler": among all the political turmoil Isaak Walton and Browne worked on peacefully.

"A Letter to a Friend" is of special interest to medical men; it was written in 1673, but not published till eight years after Sir Thomas died, and incorporated in it you will find portions of the last book. He deals with gout, rickets, physiognomy, and consumption: "Some think there were few consumptives in the old world, when men lived much upon milk; and that the ancient inhabitants of the island were less troubled with coughs when they went naked and slept in caves and woods, than now in chambers and feather beds." Deaths from consumption were very common at that time, and among those who succumbed to the disease was Lady Venetia Digby—

> "She passed away
> So sweetly from the world, as if her clay
> Laid onely down to slumber."

Her husband, Sir Kenelm, had unsuccessfully treated her with decoctions of snails, and possibly with that wondrous "Salve y^t Healeth Though a Man be Thirty Miles Off," and which contained man's blood, man's greace, mummia, linseed oyle, and other quaint ingredients, the full recipe for which salve the curious may find in the Ashmole MSS.

"Poetry to physic is, indeed, like the gilding to a pill," wrote Addison in the *Tatler*, in 1709; and, forestalling this aphorism, you will find in the "Religio Medici" a fine evening hymn, which bears close likeness, in expression, to Bishop Ken's well-known "Abide with me."

Of his scientific observations I need only say that he was probably the first to put the science of öology on a proper basis. Evelyn's "Diary" for October 17, 1671, records how, staying with Lord Howard at Norwich, he visited "that famous scholar and physitian Dr. T. Browne, author of the 'Religio Medici,' and 'Vulgar Errors, etc.,' now lately knighted." Charles II. had knighted him in that year when he visited Norwich, and it is curious to note that, with all his wonted accuracy, Browne gave the Herald's College a wrong genealogical tree. Evelyn continues, that he found the house and garden "a paradise and cabinet of rarities, and that of the best collections, especially medails, books, plants, and natural things"; and especially he paid attention to the collection of birds' eggs. Browne took him over the city, and he was struck with the "cleanesse of the streets," and the buildings with squared flints. Sir Thomas is the last one to record the breeding-place of the spoon-bill in England—"built in the Hernerie at Claxton and Reedham, now at Trimley in Suffolk." In 1663 he wrote an account of the birds of Norfolk.

In 1641 he married Miss Dorothy Mileham, and by her he had a family of twelve; she died in 1685, surviving her husband but three years. In the last paragraph of "Our Dogs," Dr. John Brown mentions Dame Dorothy; the sketch I show you will give an idea of the kind of big felt hat that was then fashionable, and, when one looks at it, one can but think of

> "The old Augustan days
> Of formal Courtesies and formal Phrase,
> The Ruffle's Flutter and the Flash of Steel."

The union was a very happy one, the lady being described by a contemporary writer "as of such symmetrical proportions to her worthy husband, both in the graces of her body and mind, that they seemed to come together by a kind of natural magnetism." The marriage caused some ribald talk when the "Religio Medici" appeared, seeing the remarks he made in it concerning *procreation sine conjunctione* ("we might procreate like trees," etc.).

Of Sir Thomas's appearance when young, I am told that the portraits make him of a rather mean aspect, but the grown-up likenesses show him as handsome and cavalier-like. Whitefoot, rector of Heigham, who had a "particular acquaintance with him," gives a description of him that I may epitomise: His complexion and hair were like his name, brown, his stature moderate, his habit of body neither fat nor lean but *eusarkos.* In his clothing he had an aversion to all finery, and affected plainness both in the fashion and ornament. He kept himself always very warm, and thought it most safe so to do, though he never loaded himself with such a multitude of garments as Suetonius reports of Augustus, enough to clothe a good family. Always cheerful, rarely merry, parsimonious in nothing, he was indulgent and liberal to his children, and he firmly believed in the value of foreign travel. Thomas went to France at the age of fourteen, and with "Honest Tom," as his father called him, he kept up a correspondence, and here is the postscript to one of the letters: "You may stay your stomack with little pastyes sometime in cold mornings, for I doubt sea larks will be too dear a collation and drawe too much wine down; be warie, for Rochelle was a place of too much good fellowship and a very drinking town, as I observed when I was there, more than other parts of France." Tom became afterwards a naval lieutenant, then passing out of history. With Edward, the eldest, the father corresponded for many years, often and at great length.

It is much to be regretted that the blot on his nature was his extreme credulity regarding witchcraft, and, in the agitation for a statue of him at Norwich, it has been objected by some that he is unworthy of this honour, for, said a preacher in London in 1681, "the higher any man is raised in Reputation, by manifesting himself wise, the more circumspectly he is concerned to be to secure his station; for a little Folly will depose him." By his evidence in 1664, at Bury St. Edmunds, when two women, Amy Demy and Rose Cullender, were on trial for witchcraft, he, at the request of the judge, Chief Baron Hale—whose leanings were at the moment distinctly in the prisoners' favour—gave evidence that convicted them. He declared that the fits were natural, but heightened by the devil, co-operating with the malice of the witches, at whose instance he did the villainies; he added, that there had been lately in Denmark a great discovery of witches. Matthew Arnold, in recent years, has tried to whitewash the judge for listening to such trash; and doubtless there is much to be said on his behalf, for both he and Browne must be judged by their time. 1664 was a very different period to our own, when, to quote the sarcastic lines of Austin Dobson—

"Ours is so far advanced an age—
Sensation tales, a classic stage,
Commodious villas.
We boast High Art, an Albert Hall,
Australian Meats, and men who call
Their sires gorillas."

The overthrow of the Commonwealth caused a vast change in the country; the balance then swung from deep superstition to an equally deep scepticism—a spirit of enquiry thus arose. Compare the "Religio Medici" with the "Vulgar Errors," and it is difficult to believe that the same mind wrote the two works. Both Green in his "Short History," and Buckle in his "History of Civilisation," ably discuss the change, but the former seems to think it was less rapid than does Buckle: look at our present-day religious revival for a glimpse of what such waves of feeling can accomplish in a brief time. It may be recalled, that 1662 saw the incorporation of our Royal Society in London, which really originated from the suggestion of a German, Nicholaus Haak, who formed the society of the "Invisible Philosophers," whose members, Wallis says, included Willis, Bishop of Chester, Christopher Wren, Robert Boyle, and some eight others. They studied physick, anatomy, geometry, and many other sciences, with "natural experiments: with the state of these studies, as then cultivated at home and abroad." Mark the change—experiments; no longer a blind faith, any conclusion from hearsay evidence; and this spirit Isaac Newton and the father of Modern Medicine, Thomas Sydenham, carried out to the utmost. This latter, who outlived Browne by some years, when asked by Sir Richard Blackmore, the poet and physician, "what books I should read to qualify me for practice," replied, "Read 'Don Quixote,' it is a very good book, I read it still." The moral he implied being, that Blackmore must study Nature itself, but some have interpreted the advice to be a gentle hint for him to cease pursuing medicine at all.

The overthrow of Puritanism was far more than that of a creed, as it affected the most prosaic things; unlike the common folk of 1752, when the calendar was altered in England, who rioted with the cry, "Give us back our 11 days," the people cried then, "Give us back our mince-pies," and they got under Charles II. what the Puritans prohibited. Anyone who reads the drama of this time will appreciate the sordid depths of vice then prevalent, chiefly, be it said, around the Court itself. If you want to get a vivid picture of the changed times, pay a visit to St. Paul's Cathedral, and then read Earle's "Microcosmographie," in which he gives an account of the daily life within its precincts in 1628—a "heap of stones and men, with a vast confusion of languages; and, were the steeple not sanctified, nothing liker Babel. The noise in it is like that of bees. . . . It is the general mart of all famous lies . . . it is the thieves' sanctuary." There were three long aisles in those days, and he relates how "men of all professions—merchants, gentry, courtiers—used to meet by 11, walk in the middle aisle till 12, and after dinner from 3 to 6." Advertisements for servants were even posted on the pillars! Can we judge Browne by our modern standard when such were the customs of his day? Ought we not to allow, as the "Christian Morals" says, "one eye for what is laudable" in him?

I almost fear to say anything of the style of his writings, in the face of eulogies and criticisms that have been made by men like De Quincey, in his essay on "Rhetoric"; by Coleridge; by Hazlitt in his two references to Browne in the "Table Talk"; by Southey; and especially by Charles Lamb, who in the "Two Races of Men," one of the "Essays of Elia," says (speaking of the "Urn Burial"), "C. (*i.e.* Coleridge) will hardly allege that he knows more about that treatise than I do, who introduced it to him, and was indeed the first (of the moderns) to discover its beauties." Browne is referred to by Lowell in the "Biglow Papers" and elsewhere, and in quite recent times Sir Frederick Treves at Liverpool, Rev. Alex. Whyte, D.D., in Edinburgh, Prof. Lloyd Roberts of Manchester, and Prof. Osler have commended his virtues.

Browne, with Milton and Jeremy Taylor, are the three great masters of decorative prose; this Caroline epoch being marked by a less virile prose than that of Queen Elizabeth's reign. It possesses many mannerisms, an over-fulsomeness of Latinity; as Browne said, "The quality of the subject will sometimes carry us into expressions beyond mere English apprehensions." And doubtless Dr. Johnson's pompous rhythm was founded much on a study of Browne, but he of course is less abstruse and involved than his mentor. Sir Thomas's sentences are more coherent than those either of Milton or Jeremy Taylor, the latter allowing his sentences to amble on far from the direct road; very often he is their superior, in his sense of the beauty of words and in the extent of his vocabulary, and, like Montaigne (whom he had much studied) he combines with a personal frankness a discursive simplicity of style; take away the Latinity and the overplus of past participles, and you would remove the characteristics of one of the quaintest of writers.[1] "In the group of literary physicians, Sir Thomas Browne stands pre-eminent," says Professor Osler; and a recent writer has asserted that much of his impassioned prose has the tension of true poetry. "He must have been a good man," is Carlyle's summing up of his eulogy on the "Urn Burial."

"But who knows the fate of his bones?"—thus speaks the preface to the "Hydriotaphia," and in the third chapter of the work we find, "To be gnawed (or, as most editions have it, 'knav'd) out of our graves, to have our skulls made drinking-bowls, and our bones turned into pipes, to delight and sport our enemies, are tragical abominations escaped in burning burials." "To be knav'd" was indeed the ironic fate of his bones, for, as Dr. Wm. Stukeley tells us, he "dyed after eating too plentifully of a Venison Feast," in 1683, on his birthday, as did Shakespeare, Raphael, and Kenelm Digby; and from the grave in St. Peter Mancroft Church at Norwich, in 1840, the sexton stole, and then sold, his skull, some workmen having first accidentally broken open the coffin. To Dr. Charles Williams, an enthusiastic collector of Browniana, I am indebted for his paper on the measurements of the skull, which now rests in the Norfolk and Norwich Hospital. Such is the resting-place of a man of whom one may safely say, as was said of his contemporary, Sydenham—

> "Such a man
> Might be a copy to these younger times,
> Which, followed well, would demonstrate them now
> But goers backward."

As Addison wrote, in the essay that I have already quoted from, "The same man who writes well can prescribe well, if he has applied himself to the study of both"; and Browne did both, for he amassed a fair fortune, but, spending it freely, he was not wealthy, in the usual acceptance of the term. He was a man of wide culture and reading, like unto that amiable pedant and poet, William Drummond of Hawthornden, whose library, passing into the possession of the University of Edinburgh in 1627, did not therefore include any of our author's works.

Now, gentlemen, what lessons may we learn from his writings, and especially from what have been called the "beautiful obliquities" of the "Religio Medici"? I think they are many, but I will only name two—the cultivation of charity and the habit of silence.

Part II. of the "Religio Medici" opens with remarks on

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[1] Professor Wendell in his Clark Lectures compares him with Burton.

Charity. He says: "I feel not in myself these common Antipathies that I can discover in others"; and he goes on to speak against the Chauvinistic view of things, that narrow, scholastic vision that we, medical men, proud of our own system of instruction at our own particular school, or proud of our own way of practice, are apt to have — that lack of open-airiness that is as destructive to the body mental as to the body corporeal. Further on he writes: "I cannot fall out or contemn a man for an errour, or conceive why a difference in opinion should divide an affection; for Controversies, Disputes, and Argumentations, both in Philosophy and in Divinity, if they meet with discreet and peaceable natures, do not infringe the Laws of Charity." Meeting as we do like this on the annual reunion of a Society, of an age well beyond the grand climacteric, the lesson is, I think, an appropriate one; the function of a Medical Society is to bring every member up to the clearing-house, to receive his intellectual rating, and so enable him to gauge his professional standard. As the present Regius Professor of Medicine at Oxford said, in 1903, doctors do not "take stock" often enough, and a well-conducted Society will help them to keep up to the progress of the times, helping them also to rid themselves of worn-out stock from the mental shop; it should save a man from sinking into the rut of the mere medical machine.

Concerning Silence I cannot do better than quote Sir Thomas himself, leaving the application of the moral to yourselves. "Think not Silence the wisdom of Fools, but, if rightly timed, the honour of wise Men, who have not the Infirmity, but the virtue of Taciturnity, and speak not out of the abundance but the well-weighed thoughts of their Hearts. Such Silence may be Eloquence, and speak thy worth above the power of words."[1]

In closing this address, I feel that an *apologia* on my part is due for venturing, like the proverbial fool, where many wise have faltered. I can only hope that what I have said may lead you to dip, deep and full, into the writings of the man whose "Religio Medici" turned the thoughts of our present-day celebrity, Prof. Osler, to the study of medicine, whose study of the book has lasted for over thirty years, with the added confession that it "has had an enduring influence on my life." Try and find in it "those thoughts of things which Thoughts but tenderly touch," as the book itself says.

In making the *apologia*, I will not call for many "howreglasses," as Browne in the "Christian Morals" mentions the Romans used to do, but I simply offer to you, Mr. President, a verse from the "Apocrypha," a book of greater age than any I have yet spoken of: "And if I have done well, and as is fitting the story, it is that which I desired: but if slenderly and meanly, it is that which I could attain unto."

As a fore-word for 1905, I would say to the Lancaster Medical

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[1] "Christian Morals," part iii.

Book Club, quoting from the Book of books: "Let us hold fast our profession;" "Not forsaking the assembling of ourselves together." Let us take these for our "Religio Medici"; for they will help in the daily struggle with disease, that we, practising physicians, wage each in our own sphere—be it general or special; all, however, working in the spirit of modern preventive medicine towards that goal, when, even in our most pessimistic mood, we shall think Sir Thomas erred, when he wrote, "For the world, I count it not an inn, but a hospital; and a place not to live, but to die in."

Mr. President and Gentlemen,

> "Time unrevoked has run
> His wonted course, yet what I wished is done."

REVIEWS OF BRITISH AND FOREIGN LITERATURE.

Clinical Diagnostic Bacteriology. By ALFRED C. COLES, M.D., F.R.C.S.Ed. London: J. & A. Churchill.

DR. COLES is already well known by his book on the examination of the blood, and we do not doubt that his new manual will prove as serviceable as its predecessor. In it, ample guidance will be found by those desirous of carrying out bacteriological investigations for diagnostic purposes; the methods described being such as require no laboratory for their performance, any practitioner who can afford the time necessary for the work will find the detailed instructions given sufficient to enable him to differentiate any of the common pathogenic micro-organisms. Serum and cyto-diagnosis are also shortly dealt with. The feature, however, which will probably do most to give the book permanent value is the account of the author's researches on acid-fast bacilli, and the criteria which he lays down for distinguishing the bacillus tuberculosis from the smegma and other acid-fast "pseudo-tubercle" bacilli. His observations prove the ordinary statement that alcohol affords a ready means of distinguishing between these to be fallacious. If, as he hopes, the method of decolorisation which he advises (Pappenheim's solution for from four to twelve hours) enables the question whether a particular organism (in milk, for example) is, or is not, tubercle, to be settled without resort to inoculation and its attendant delay, bacteriologists will be greatly in Dr. Coles' debt.

Medical Diagnosis. By Dr. WILHELM v. LEUBE. Translated by JULIUS M. SALINGER, M.D. London: Sidney Appleton.

DR. SALINGER has done the English-speaking medical world good service in translating Professor Leube's "Specielle Diagnose inneren krankheiten." The title, Medical Diagnosis, is customarily used to connote an account merely of clinical methods, and hardly suggests the scope of the book, which is nothing less than a manual of medicine in which the question of diagnosis transcends in importance the pathology and history of disease, and altogether excludes consideration of treatment. It is not too much to say that almost every page bears witness of being written by a great clinician, who is willing to go just so far and no farther than objective signs may lead, whose diagnosis is never intuitive, but always severely inductive, and to whom this particular branch of science has become, as he himself says, "a fruitful source of lasting, genuine satisfaction." The book shows in high degree that relegation of theoretical considerations to the background which is typical of some of the best German science, for when the Teuton resolves to be *praktisch* he carries out his intention with characteristic thoroughness. The first section of the book is devoted to circulatory diseases. Here we may notice the value which Leube attaches to sphygmograms, and also the stress which he lays on examination of the vessels, particularly the veins, in the diagnosis of cardiac lesions. Throughout the whole book we find the tendency to single out the one sign of any given disease which the writer's experience has shown to be of most diagnostic value. Without stating it explicitly, and without neglecting the latter means of arriving at a conclusion, the author always leans toward relying on one definitely ascertained phenomenon in preference to drawing inferences by balancing a number of less certain signs. Thus in the differential diagnosis of pericardial effusion the fact that the apex beat is not at, but internal to, the margin of the dull area, is repeatedly insisted on, and the same idea runs through the whole work, which thereby attains such a definite personal character as few text-books possess. Except for passing references, no special mention is made of the Stokes-Adams syndrome. Under angina the futility of distinguishing between true and false forms is indicated. In the chapter on diseases of the respiratory organs the section on the differential diagnosis of stenosis of the bronchi strikes us as particularly useful. In Leube's mind the early diagnosis of pulmonary tuberculosis does not seem to present so much difficulty as the frequency with which this topic is made the subject of lectures would suggest; indeed, in contrast with much that has recently been written on the subject, he is delightfully simple and terse. A symptom of small pleural effusion on which he depends is the appearance of dulness on the lower axilla when the patient leans to the affected side; this is not one which we remember having noticed in English text-books. The chapter on liver diseases is excellent; the accounts of simple jaundice giving rise to grave cerebral symptoms when it occurs in hysterical subjects, are interesting. The author is sceptical as to the atrophic stage of cirrhosis being preceded by enlargement of the liver—an opinion with which many clinicians will join issue. A footnote to the chapter on gastric diseases says that he has tried to define their characteristics precisely and to pay little attention to exceptional cases on account of the chaotic accumulation of individual observations. The account of these affections is one of the clearest we have read, and if the above proviso be borne in mind, cannot but be useful. While disappearance of the liver dulness anteriorly is valueless as a sign of perforation, its absence in the axilla is important, as a tympanitic note there cannot be due to coils of bowel. Pneumococcus peritonitis is not given a special place, as its importance surely warrants. The diagnosis of nervous diseases is fully discussed, but here, perhaps because from the nature of the subject he travels along well-worn paths, the author is less instructive; the curious scoliosis of sciatica is fully described; too little importance is, we think, attached to the diagnostic value of tremor in larval Graves' disease. Among blood diseases one naturally turns to leucanæmia, with which Leube's name is associated. His well-known case is described, and here it should be stated that throughout the book instructive case narratives are interspersed illustrating important points. It is impossible to go on particularising: suffice it to say that the book is of outstanding merit, and ought to enjoy as much popularity here as in Germany.

The translator has done his work well on the whole; he has adhered closely to the original, with the result that, though his meaning is seldom obscure, the sentences halt a little. Respectively, principal, and eventual are not good equivalents of *respective*, *principiel*, and *eventuel*. *Nonne*, in the combination *Nonnengeräusch* means a humming-top, not a nun; and there is no reason for calling the circumflex and musculo-spiral nerves the axillary and radial. "Diminished" in the last line of page 429 is surely a misprint. There are other similar minor defects, which should be corrected in future editions.

A Text-Book of Clinical Diagnosis. By L. NAPOLEON BOSTON, A.M., M.D. London: W. B. Saunders & Co.

WITH so many text-books on diagnosis already in the field, it seems at first as though it were hardly worth adding to their number, especially considering the labour of selecting and checking observations from the daily increasing accumulation which the application of laboratory methods to clinical medicine is heaping up. Dr. Boston, however, has ventured on this task, and the volume before us is the result. It is manifestly impossible to strike out any distinctly new line in dealing with the subject, or to avoid repeating much that has been said by previous authors; in fact, no great originality can be expected. It is therefore the more to Dr. Boston's credit that he has produced a book which has special features of its own, and is not entirely compiled from its predecessors. The most valuable parts of the manual are those concerning parasites, which are dealt with much more fully than usual in this class of book. In the section on the blood there is an account of trypanosomiasis, and a very full description of the malaria organism. Under the heading "Rhabditis genitalis," some original observations on worms in the urine are detailed. A table of no less than sixty-one animal parasites found in the fæces is given—not all of these, happily, are deemed worthy of lengthy notice, but the description of the majority is sufficient for purposes of identification. Altogether, about a quarter of the volume deals with the parasites of man. Another characteristic of the book is the prominence given to the examination of the skin, genital secretions, and discharges from the nose, eye, and ear. The chemistry of the urine is fully discussed, many of the newest methods being described, among them the author's test for Bence Jones' albumose, depending on the recognition of the loosely contained sulphur. Centrifugal analysis appears promising as a quick means of estimating inorganic urinary constituents. The author's ingenuity in inventing simple and convenient appliances is repeatedly evident, though it is a little difficult to discover the originality of the brush depicted on p. 212. The volume is freely illustrated, some of the plates being excellent, others rather crudely executed. On the whole, while this is not likely to supersede any of the standard manuals, it will probably be of use in the clinical laboratory as a guide to the newest methods, and especially as a source of information on the less accessible facts of diagnosis.

NOTES ON BOOKS.

THE importance of determining the functional "sufficiency" or "insufficiency" of each kidney before performing serious operations on these organs is now well established. In *Functional Diagnosis of Kidney Disease*, by Casper and Richter of Berlin—translated by Bryan and Sanford—(Rebman Limited, London), we have a most instructive and suggestive epitome of the current views on the clinical methods of investigating the functional activity of the kidneys. From an exhaustive clinical and experimental investigation of the subject, the authors conclude that reliance is to be placed chiefly on cryoscopy and the phloridzin test.

The advances in our knowledge of the chemical composition and physical properties of the urine render it necessary that the practitioner of to-day should be familiar with something more than the ordinary routine tests. In Dr. Saxe's *Examination of the Urine* (W. B. Saunders & Co., 1904) we have a manual which furnishes us with an excellent guide to all the modern methods of investigation, chemical, microscopic, and physical. The descriptions are succinct, clearly expressed, and easily followed, and while there is no unnecessary multiplication of methods, the authors have described all those of established value. The large clear type, the attractive limp leather binding, the well-executed plates of urinary deposits, and, not least important, the exhaustive index, render this one of the most useful of clinical manuals.

Those who believe that the examination of the urine comes within the province of nurses (we do not belong to the number) will find in Dr. Carruther's *Urine Examination made Easy* (J. & A. Churchill, 1904) a safe and simple guide to place in their hands. Mr. Mark Robinson's *Guide to Urine Testing* (John Wright & Co., Bristol) is also addressed to nurses, and appears in a second edition.

We have before us Nos. IX. and X. of the Medical Monograph Series (Baillière, London, 1904). In No. IX. Dr. Wyatt Wingrave furnishes us with a most readable account of *Adenoids*, in which he endeavours, with some success, we think, to remove "some of the misconception which surrounds the subject." The details of treatment are carefully described, and the important subject of the after-treatment of patients operated upon has not been neglected. Mr. W. Hotten George contributes a chapter on anæsthetics as applied to adenoid operations.

Mr. Edmund Owen is responsible for No. X., *Cleft Palate and Hare-Lip.* In place of a preface he offers us an "apology"—for what, is not quite clear. "My chief excuse for this Essay," he says, "is that I desired to bring into more general notice the original and excellent work which has been accomplished in the treatment of cleft palate by Dr. Truman Brophys. . . ." We have read Mr. Owen's book with profit and pleasure, and have found nothing in it which demands apology or requires to be excused. We can confidently recommend it to all interested in the subject of which it treats.

We extend a hearty welcome to the first volume of the *Transactions of the Medico-Legal Society* (Baillière, London), which contains an account of the Proceedings of the Society for the years 1902–3–4. It is edited by Mr. Stanley B. Atkinson of the Inner Temple, and contains a series of interesting and useful papers from the pens of Sir W. J. Collins, Dr. H. H. Littlejohn, Dr. Claye Shaw, Dr. W. W. Westcott, Mr. John Troutbeck, Earl Russell, the Editor, and others.

We have before us a second edition of Dr. Anna M. Galbraith's *Four Epochs of Woman's Life* (W. B. Saunders & Co., Philadelphia). It is "written expressly for the laity,"—with what object we find ourselves utterly unable to imagine. We should think, not twice or thrice, but many times, before we placed this book in the hands of any layman of either sex. The writer is very profuse with her quotations from the poets, philosophers, and proverb-writers. Might we remind her, and the laity, that "where ignorance is bliss, 'tis folly to be wise"?

In the preface to Mr. Charles W. Glassington's *Golden Rules of Dental Surgery* (John Wright & Co., Bristol), the author says, "In a booklet like this it is probable that there may be sins of omission—I trust none of commission." In our opinion the writing of such a collection of trivialities is such a cardinal sin of commission that it is needless to analyse the mass for minor examples.

In *Radium and all About It* (Whittaker & Co., London), Mr. Bottone furnishes in popular language a most readable account of this wonderful substance.

We congratulate Dr. Luke on the appearance of a second edition of his *Guide to Anæsthetics* (Wm. Green & Sons, Edinburgh, 1905). In the present issue the use of ethyl chloride as a general anæsthetic is discussed at greater length than in the previous edition, and the author expresses a high opinion of its value. The Vernon Harcourt inhaler and the Dubois apparatus are described in an appendix.

A useful work on the *Landmarks and Surface Markings of the Human Body* has been written by Mr. L. B. Rawling (H. K. Lewis, London, 1904). The descriptions are clear and accurate, and the illustrations (twenty-nine in number) are well executed and instructive. We are not convinced, however, that Holden was not right in omitting all illustrations from his *Surgical Landmarks*—one of the best anatomical books ever published—with the object of ensuring that the student will go to nature for the verification of the text.

Of the making of books on appendicitis there is verily no end. Dr. Bayard Holmes has added another to the number—*Appendicitis and other Diseases about the Appendix*—(Appleton, New York, 1904). It is written from the American standpoint, but does not appear to us to add anything material to our knowledge of the subject. The puerile "adages" at the end of the volume could easily have been spared.

We have already (August 1904) referred to Mr. Leedham-Green's work *On the Sterilisation of the Hands* (Simpkin, Marshall, London, 1904). We are glad to have his papers in book form.

The second edition of Dr. E. H. Colbeck's *Diseases of the Heart* (Kimpton, London, 1904) has been revised and brought up to date.

We had occasion so recently to refer to Mr. Mummery's *After Treatment of Operations* (Baillière, London, 1904) that it is only necessary now to chronicle the appearance of a second edition, and to congratulate the author on having supplied such a useful work.

The latest issue of the *International Clinics*, vol. iii., 14th series, 1904 (Lippincott, London), contains a valuable series of papers on Syphilis, in addition to many other important papers. This is one of the best volumes of this excellent periodical that we have had the pleasure of reviewing.

Dr. Burney Yeo has done good service to the profession by publishing a work on *The Therapeutics of Mineral Springs and Climates* (Cassell & Co. Limited, London). The work is divided into two parts, the first dealing with mineral springs, and the second with climates. The subject-matter does not lend itself to detailed analysis, and we must content ourselves with commending it to our readers as a reliable guide on the subjects with which it deals.

We have received the 37th volume of the *Transactions of the Clinical Society of London* (Longmans, London). The interest of reading the valuable records of the Proceedings of this Society is greatly enhanced by the many excellent illustrations which accompany them.

The issue of the official *Year-Book of the Scientific and Learned Societies of Great Britain and Ireland for* 1904 (Charles Griffin & Co., London) maintains the high standard set by its predecessors.

It is only necessary to chronicle the appearance of a fourth edition of Dr. Scudder's work (London, Saunders & Co.) on *The Treatment of Fractures.* Its most striking feature is the profusion and general excellence of its illustrations. In reviewing the second edition of this work, we ventured to pass some mild strictures on its literary style, and we regret to find that we have nothing to withdraw in regard to the present issue.

Hospital Reports.—The Reports of Hospitals usually contain a vast amount of interesting information, and the present volumes are no exception to the rule. Those of *St. Thomas' Hospital* (vol. xxxii.), edited by Dr. Hawkins and Mr. Battle, are chiefly devoted to the detailed reports of the various departments of the hospital, and these include a number of analyses and abstracts of specially interesting cases. There are only four papers by members of the teaching staff, namely, "On Acute Polio-encephalitis," by Dr. Hawkins; "On Volvulus of the Cæcum," by Messrs. Corner and Sargent; "On Acute Strangulation of the Small Intestine," by Mr. Bernard Pitts; and one by Messrs. Seymour Jones and Corner "On the Filling of Cavities in Bone with the Mixture devised by Mosetig-Moorhof."

The Reports of *Guy's Hospital* (vol. lix.), edited by Dr. Bryant and Mr. Steward, are almost entirely made up of original papers, of which mention should be made of that by Mr. Bowen, "On Sub-dural Hæmorrhage," and Mr. Richards, "On Renal and Adrenal Growths."

Lieutenant-Colonel Lambkin's little work on *The Treatment of Syphilis* (Baillière, London, 1905) can be read through at a sitting, yet we feel that it contains more solid sense regarding the subject with which it deals than many a bulky tome several times its size. As official specialist on syphilis to the army in India, Lieutenant-Colonel Lambkin has had unique opportunities of observing this disease, and of tracing his patients and observing the effects of treatment over many years. His opinions therefore come with exceptional weight, and the clear, terse, soldier-like way in which he states his views carries conviction with it. We abstain from quoting his conclusions, as we are desirous that the work should be read by every practitioner who has occasion to treat syphilis.

In *Les Médications Préventives: Séro-thérapie et Bacterio-thérapie* (Baillière et fils, Paris, 1905), Dr. L. Nattan-Larrier has given us a résumé of all the evidence bearing on the subject of preventive inoculation. As might be expected, diphtheria occupies a large share of his attention, and he amply bears out the now general conclusion as to the value of the procedure. Preventive inoculation against tetanus, streptococcal infection, plague, cholera, typhoid, and yellow fever, is also reviewed, but the results are, so far, less certain.

With the object of encouraging the student to practise on dead animals the chief operative procedures of ophthalmic surgery, Mr. H. B. Grunsdale has published a small work on *The Chief Operations of Ophthalmic Surgery* (Medical Times Limited, London, 1904).

Squire's *Companion to the Pharmacopœia* is now a standard work. In preparing a new edition, Mr. Squire decided, in view of the enormous increase in synthetical products, and in new methods of assay and manufacture of pharmaceutical preparations, to divide the work. We have before us *The Pocket Companion* (J. & A. Churchill, London, 1904), which represents the smaller work, and which is intended for the use of prescribers and dispensers. It is specially adapted to meet the requirements of medical men. The book is arranged, like the older Companion, on strictly alphabetical lines, and in this way the necessity of constantly referring to the index is largely obviated.

The alphabetical arrangement is supplemented by a list of the official and non-official preparations, given immediately under each substance immediately following the dose, so that a prescriber can see at a glance, not only the various forms in which a medicament can be given, but also whether the preparation is an official one or not.

Amongst the non-official preparations, several formulæ have been included from continental pharmacopœias, and from the pharmacopœias of the London hospitals, when these specially indicated good methods of exhibiting the drug; whilst almost all the newer remedies are dealt with. The better known ones, which have stood the test of time and experience, and have come into frequent use, are dealt with under their own headings; whilst those less generally used are contained in a classified list appearing under the heading of the drug or chemical principally represented in their chemical constitution.

The paragraphs on solubility have been greatly extended; and the numerous figures given, we are told, are the results of numerous experiments, and not mere abstracts of published data.

The special feature of *The Pocket Companion* is the prescribing notes, which have been almost entirely rewritten and very considerably enlarged, the information being a condensation of a vast amount of original experimental research.

The medicinal properties have been brought thoroughly up to date, and are characterised by reference to all the most recent medical literature.

The doses are given in both the imperial and metric system, and, in the cases of potent drugs, a comparison is made with the dose of one of the foreign pharmacopœias, or, where this is not available, with some standard continental work.

The chapter on therapeutic agents of microbial origin includes therapeutic sera, organic extracts, vaccines, etc., and has been specially written for the book by Dr. Tanner Hewlett. It gives the practitioner a clear idea of the present position of this department of medicine.

A chapter on mineral waters includes British and foreign spas and a classification of mineral waters, the quantities of the principal ingredients of each spring being given.

A thoroughly revised and up-to-date therapeutical index and an abridged general index concludes the volume.

Our only excuse for referring to *Ombra the Mystery*, by Frederick Graves (George A. Morton, Edinburgh, 1904), is that it purports, according to the advertisement, to be a story of medical student life in Edinburgh. Those who have lived that life will recognise in Mr. Graves' romance nothing but a travesty of what he professes to describe, while those who have not done so are in danger of assuming that the modern student of medicine is endowed with the tastes and manners of

Tom Sawyer and his contemporaries. The author has attempted to give to his description a semblance of verisimilitude by introducing, under transparent disguise, the names of some distinguished Edinburgh teachers, and, in so doing, seems to have exhausted his ingenuity. A writer who refers to the Royal Army Medical Corps as the "R.A.M.," who does not know the difference between a solicitor and an advocate, and who compares the view of Duddingston from Arthur's Seat to "the vignette of a Christmas card," seems ill equipped to write of medical life, of Edinburgh, or of anything else.

Ombra—who, by the way, is not such a mystery as Mr. Graves seems to suppose—first appears on the parapet of the Dean Bridge, from which she is summarily dragged by Dr. Meredith, a University assistant, with duties in the Infirmary, who chances to be passing. To have handed her over to the police, or to have had her removed to an appropriate ward in the hospital, would have spoiled the story, so Dr. Meredith carries her off to his lodgings in the Warrender Park district, where, under "the somewhat lax chaperonage" of Mrs. Clephane, his landlady, she is nursed through the inevitable fever into which she falls after her escapade. On her recovery, through the influence of Dr. Meredith (save the mark!), she is at once admitted to the Infirmary as a nurse-probationer, and, to us, the only really mysterious aspect of her career is the way in which, at her own sweet will, she takes days, week-ends, and even weeks off duty, to spend in platonic wanderings through the neighbouring country with Dr. Meredith. Christmas week is spent in "a quiet farm in the beautiful Tweed valley," and in the chapters devoted to this visit Mr. Graves contrives to exhibit more ignorance of Scottish life, customs, and language than we imagined possible in one who has presumably spent at least some portion of a student career in Edinburgh. He puts into the mouth of his host, an honest Peeblesshire farmer, a language which is made up of scraps of the dialects of the Lothians, the Mearns, and the West Highlands, not to mention Scotticised words only known to the untravelled Cockney. We may point out to the author that Gaelic is not spoken in Peeblesshire, and that no native of that county would say of Edinburgh, "She's a bonnie toon." The "last of the Lairds of Lyne" is named Hector Shiel, he wears the kilt, and he never moves out without his bagpipes, which he carries "under his shoulder"! Mr. Graves sets at defiance alike the laws of the land and the laws of nature. He (Dr. Meredith) fishes Tweed on the 24th of December, while Ombra "settles herself on a rock with her book," . . . and "plucks at the heather in a meditative way." Although the snowflakes are "sailing slowly down," Dr. Meredith is busy "overhauling rods and flies and other tackle of sport in the firelit hall during tea." When the thaw comes, the snow on the tops of hills is the first to melt.

We have not space to follow the fortunes of Ombra and her guardian, Dr. Meredith; nor will the reader, unless he is specially interested in suicides,—there are five successful and two unsuccessful attempts recorded in the story,—find his time well spent in doing so.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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NERVOUS DISEASES.

Intermittent Claudication.—In reference to Erb's view that excess in tobacco is one of the chief causes of this malady, a paper by Idelsohn (*St. Petersb. med. Wchnschr.*, 1905, January 22), who, owing to the great prevalence of the disease in Russia, has had large experience of it, may be noted. Among 188 patients whose chief complaint was pain in the feet and legs, intermittent claudication came second in point of frequency with thirty-four cases. Idelsohn found that a considerable proportion of these were non-smokers, and regards cold as the chief etiological factor, the others being syphilis, alcohol, flatfoot, diabetes, and absorption of toxic products from the bowel in chronic constipation. On the other hand, Renon (*Arch. gén. de méd.*, Paris, 1905, February 7) reports a case, fatal from gangrene of the foot, in a patient who abused tobacco but was neither alcoholic nor syphilitic. The aorta was found to be atheromatous and completely blocked by a thrombus.

Cerebellar tumours.—A number of excellent papers on this subject have appeared in the *N. Y. Med. Journ.*, 1905, February 11 and 18, and in the *Albany Med. Annals*, 1905, February. Being of the nature of reviews, these are for the most part ill adapted for summarising, except that of Dana, who, in the former magazine, describes, under the title of *the cerebellar seizure*, a new syndroma characteristic of fibromata of the cerebello-pontine angle; such growths—*acoustic fibromata*, as they are called—can often be recognised very early, are benign, frequently pedunculated, and can sometimes be removed successfully; hence the importance of knowing their special symptomatology. Shortly stated, the characteristics of this particular lesion seem to be as follows:—The ordinary symptoms of cerebellar tumour develop, with blindness and deafness first of one side, then of the other. In addition, there are attacks of tinnitus and vertigo, lasting for about half a minute, in which the patient has violent noises in the head and falls to the ground, sometimes losing consciousness. These seizures differ from ordinary cerebellar vertigo in that they are not produced by sudden change of posture. They are characterised by—(1) Loud, high-pitched tinnitus, or roaring and crackling noises, suddenly increasing in intensity; (2) vertigo, usually objective, with or without forced movements; (3) a tendency to drop or fall instantly to the ground in one particular direction; (4) sometimes sudden blindness or loss of consciousness; (5) in some attacks tonic spasm of an extensor type. Dana believes this is more than a simple labyrinthine vertigo, in which there is nausea, but unconsciousness or convulsions are rare. He has seen the "cerebellar fit" in hereditary cerebellar defect as well as in acoustic fibromata.

From another paper on the subject of *cerebral localisation* (Mills, *Proc. Phila. Co. M. Soc.* 1904, Nos. 6 and 7) we extract the following rules for removal of tumours by operation:—(1) In prefrontal tumours higher psychical symptoms should be the chief guide, and in the case of the left hemisphere agraphia and aphasia, the opening always being anterior to the main motor region. (2) When motor symptoms dominate, the opening should expose the brain three-fourths in front and one-fourth behind the central fissure. (3) When disorders of the muscular sense and astereognosis dominate the picture, the opening should expose the brain three-fourths behind and one-fourth in front of the central fissure. (4) When oculomotor symptoms (ptosis, etc.) are present, with symptoms pointing to parietal lobe, the operation should be parietal or parieto-occipital, the interference with the eye movements being not basal but due to disturbance of the visual motor cortex. (5) When object blindness is a central symptom, the lower temporo-occipital convolutions should be exposed. (6) With hemianopsia or hemiachromatopsia an attempt should be made to reach the mesotentorial surface of the occipital lobe. (7) In literal or verbal blindness the angular gyrus should be exposed; in word-deafness the posterior extremities of the first and second temporal; in verbal amnesia, the mid-temporal region; in note deafness the anterior temporal region.

Lesions of the cervical sympathetic are discussed in several recent papers. Urbantschitsch (*Wien. klin. Wchnschr.*, 1904, No. 49) describes the case of a girl suffering from unilateral hyperidrosis and anidrosis of the face. Five and a half years previously she had greatly overheated herself by hurrying on a very warm day, and then sat for two hours in a cold room. Immediately thereafter it was noticed that while the right half of her face flushed and perspired freely, the left half remained cool, pale, and dry. This condition has persisted, there being hyperidrosis on the right half on the face, anidrosis on the left, while the rest of the body perspires naturally. At rest the two halves of the face are not visibly different, but the surface temperature is about 0·5° C. higher on the right than on the left, and there is slight myosis of the left eye. These vasomotor, secretory, and pupillary disturbances point to lesion of the left cervical sympathetic, the hyperidrosis on the right being probably compensatory. Theoretically, irritation of the cervical sympathetic causes vaso-constriction, increased secretion of sweat, and mydriasis; paralysis, vaso-dilatation, abrogation of sweating, and myosis, but clinically there is a good deal of variation in the association of these phenomena, probably because the various fibres are unequally affected. In the case described the secretory and vaso-dilator fibres were completely paralysed, while those going to the iris were only paretic. The writer has found records of hæmorrhage into the sympathetic in fatal sunstroke, and thinks that this was the lesion in his case. Rosenfeld (*München. med. Wchnschr.*, 1904, November 15) reports a case of carcinoma involving the right lower cervical sympathetic ganglion, and causing flushing of the left side of the face, abolition of sweating on the right side of the face, and contraction of the right pupil and narrowing of the palpebral aperture. The ciliospinal reflex was preserved on both sides. The points of interest are the contralateral hyperæmia, the anidrosis, and the retention of the pain reflex. The cause of the first of these is obscure; it has, however, been observed in other cases, and the practical point is that, in the diagnosis as to which sympathetic is affected, less importance should be attached to the vasomotor changes than to the pupils. The case disproves the theory that hyperidrosis is due to lesion of the lower, and anidrosis to lesion of the upper cervical ganglion. It rather seems that anidrosis is due to complete, and hyperidrosis to partial, interruption of the sympathetic. The persistence of the ciliospinal reflex is also difficult to explain; it is sometimes absent, sometimes present in complete division of the sympathetic; from observations on animals, in which both sympathetics were divided, it seems possible that it may be controlled from a second centre in the brain. Another paper on the same topic is that by Purves Stewart (*Practitioner*, London, 1905, February).

Epilepsy.—The relation of cholin to epilepsy is the subject of Donath's Craig Colony Prize Essay (*Med. News*, N. Y., 1905, January 21 and 28), in which an account is given of some important researches on the rôle played by cholin in epilepsy. The most recent work having failed to demonstrate any constant anatomical substratum for the disease, the trend of belief is that in idiopathic epilepsy there is, in addition to increased cortical irritability, a second factor, in the shape of a chemical excitant. If this be so, such a substance ought to be recoverable from the cerebro-spinal fluid of epileptics (which has proved a convulsant in guinea-pigs), and Donath has followed up this line of research. Mott and Halliburton discovered cholin in the blood and cerebro-spinal fluid in diseases attended by breaking down of nervous tissue; it is supposed to arise from the decomposition of the lecithin set free by the disintegration of the medullary sheaths. Donath has worked out a number of new tests for, and methods of isolating, cholin, for details of which the original must be referred to. He found it in fifteen out of eighteen cases of genuine epilepsy, in three cases of Jacksonian epilepsy, and in one case of syphilitic epilepsy. It was also isolated from the great majority of a series of organic nervous diseases, but was absent in those of functional nature. The point brought out is that cholin is as frequently found in epilepsy as in diseases accompanied by disintegration of nerve elements. Of the other ingredients of cerebro-spinal fluid, the most abundant was sodium chloride; potassium, ammonium, and phosphoric acid were also present, except in two cases—both of epilepsy. Lecithin was twice found. Experiments were made as to whether intracerebral and intravenous injection of cholin caused the substance to appear in the urine, but with negative results; hence it appears to be entirely burnt up in the system. Cholin (and its ally neurin), when injected under the dura or into the cortex, gave rise to the most severe tonic and clonic spasms; the injections were not made near the motor cortex. The convulsions were either general or unilateral, and were followed by paresis. General tremor, trismus, spasm of respiration, salivation, the passage of urine and fæces, and usually mydriasis, were also observed; consciousness, however, was retained. Donath thinks that the strongly convulsant action of cholin justifies the belief that it plays an important part in the epileptic seizure, and presumably also in the epileptiform attacks of general paralysis. It is not improbable that other products of metabolism, such as ammonia and kreatinin, may participate.

Treatment of epilepsy in connection with auto- and hetero-toxins (*Med. Rec.*, N. Y., 1904, December 3).—Holding the toxæmic theory of epilepsy, Hamilton in this paper outlines the therapeutic measures which it suggests. He, like Donath, regards cholin as probably the active agent in the production of fits, and quotes Mott's work as showing that it causes a fall in blood pressure. Clinical observation of epileptics convinces him that in the interparoxysmal periods the arterial pressure varies greatly, and in particular tends to fall, and the pulse to become more rapid, before a seizure occurs. In one patient he found that attacks were very numerous while the pulse was 100 or more; under digitalis, as the tension rose and the pulse slowed to below 80, the attacks ceased. In those cases, especially, in which fits coincided with gastro-intestinal disturbances, the toxicity of the urine and its indican content were raised. Hamilton's line of treatment is, briefly, elimination, and maintenance of a steady arterial pressure. He employs baths, friction, active and passive exercise; a minimum of proteid in the diet, and avoidance of everything—fats and cod oil included—likely to be badly assimilated. For gastro-intestinal torpidity he gives hot water copiously; and for imperfect biliary action, calomel and intestinal antiseptics. It is probably as an antiseptic that boric acid is useful. Bromides and other depressing drugs should be used in small doses well diluted, and best combined with a vascular sedative. To push them to the extent of causing bromism is to cause a vascular hypotonus which only invites attacks and interferes with digestion. Chloral and veronal are sometimes useful, and so, occasionally, are injections of saline solution.

Amaurotic family idiocy.—A case of this disease forms the subject of a series of communications in the *Am. Journ. Med. Sc.*, 1905, January. The clinical aspects of disease are dealt with by M'Kee; but, except by way of confirmation of facts already known, his paper does not add materially to our knowledge of the symptoms of the rare malady. The ocular manifestations and the histology of the eyes are discussed by Buchanan and Shumway. The changes found were thinning of the retina, degeneration of the ganglion cells, and atrophy of the optic nerves and tracts. There has been some controversy as to the nature of the changes producing the fundus lesion, certain observers having ascribed the appearances at the macula to œdema of the retina, but this paper affords conclusive evidence of the degenerative character of the process. Spiller is responsible for the pathological study of amaurotic idiocy, and his findings may be summarised as enlargement of the nerve cells, with displacement of the nuclei, and loss of chromophil granules and dendritic processes. These changes were universal, not a single normal nerve cell being visible in the central nervous system. There was also degeneration of the pyramidal tracts, more marked (of earlier date?) in the cord than in the brain. Many other parts of the white matter were also degenerated, but the posterior columns escaped. Parts of the muscles and peripheral nerves also showed degeneration—a hitherto unrecorded observation. Nowhere was there any sign of an inflammatory process. Spiller comments on the fact that the electrical irritability of the muscle is preserved, notwithstanding the widely-spread cellular change. The most interesting part of the paper is Spiller's suggestion that there may be a type of disease resembling amaurotic idiocy, but fatal about the eighth or ninth instead of the second year of life. The idea was suggested by the examination of the nervous system of two imbecile children, in whom the clinical histories resembled, and the pathological changes were identical with, those of amaurotic idiocy.

SURGERY.

UNDER THE CHARGE OF

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Acid Intoxication.

Under the somewhat vague term "Acid Intoxication," James A. Kelly of New York (*Ann. Surg.*, Phila., No. 2, vol. xli. p. 181) discusses a clinical condition which has previously been observed and described by Brewer, Guthrie, and others, under such names as acetonæmia, aciduria, delayed chloroform poisoning, etc. The author's observations are based on a series of 400 cases studied by him in the Boston Children's Hospital and Boston City Hospital, in forty-six of which symptoms of acid intoxication were present. In all these forty-six cases acetone and diacetic acid, either separately or together, were found in the urine. The presence of acetone and diacetic acid is probably a manifestation of intoxication, due to various fatty acids following some pathological change in metabolism. This condition was formerly thought to occur only in fatal cases of diabetes, but recent researches prove that it is entirely independent of diabetes, and the author believes that it should be considered as a distinct affection. The amount of acetone excreted is no indication of the severity of the acid intoxication. In many of the fatal cases the liver was fatty; and in a large proportion the patients suffered from symptoms suggestive of increased intra-cranial tension. The author's forty-six cases presenting symptoms of acid intoxication included: Eleven cases of appendicitis; fourteen of contusions and fractures; two of gastric disease; two of carcinoma; three of lacerated wounds; two of localised septic processes; two of cerebral concussion; and one each of salpingitis, acute osteomyelitis, floating kidney, fæcal fistula, epilepsy, tuberculous cervical glands, burns, diabetic gangrene, piles, and alcoholism.

In twelve of the cases the symptoms appeared within from twenty-four to forty-eight hours after the administration of a general anæsthetic; ether having been used in ten of them and nitrous oxide in two. In seventeen cases the symptoms developed in hospital without any anæsthetic having been employed, and in other seventeen the symptoms were present on admission, the patients having suffered from injuries. Acetone and diacetic acid were present together in twenty-four instances; acetone alone in twenty; diacetic acid alone in two; acetone, diacetic acid, and sugar in three; acetone and sugar in one. In the forty-six cases there were six deaths.

The earliest symptoms of the condition were a peculiar apathy, a sweetish odour of the breath suggestive of chloroform, distaste for food, slight rise of temperature, and, in most cases, vomiting. The vomiting occurred without apparent cause, often following immediately on taking anything into the stomach. The vomited material varied, in mild cases being copious, colourless, and watery, having an offensive acid odour; and in severe cases dark, bile-stained, or of a "coffee-ground" appearance. The pulse was usually rapid, of low tension and weak; and, except in severe cases, there was an absence of fever. As the condition progressed the patient became restless, and later stuporose or delirious. Cyanosis generally occurred just before death. In the fatal cases the urine was scanty, turbid, of high specific gravity, and in several cases contained albumin.

In the mild cases the patients complained of being drowsy and weak, there was an odour of acetone in the breath, and the vomiting varied in amount. The symptoms lasted for two or three days, and passed off suddenly, coincidently with the disappearance of acetone and diacetic acid from the urine.

In the mild cases no special treatment was adopted. If vomiting occurred, mouth-feeding was prohibited, nutrient enemata being employed. The administration of bicarbonate of soda by mouth, by rectum, and intravenously was tried, but without apparent benefit. The best results were obtained by the use of adrenalin chloride—200 to 500 c.c. of a 1 in 50,000 saline solution being given subcutaneously every eight to twelve hours. Thirst was relieved by enemata of saline solution. Detailed notes of the cases are appended to the paper.

Dislocation of the Patella, with Rotation on its Horizontal Axis.

A case of this rare accident is reported by W. S. Cheesman (*Ann. Surg.*, Phila., No. 1, vol. xli. p. 105). Only five similar cases have hitherto been recorded. A boy, æt. 13, sustained an injury to his left knee by being thrown from a railway train. The patella could be felt projecting straight forward from the space between the tibia and femur. The quadriceps tendon was ruptured, and on pressing the fingers above the patella the outline of the joint surfaces could be recognised. The patella was so firmly fixed in its new position that even under chloroform it could not be returned to its normal position, and it was only on opening the joint, and then with difficulty, that the bone could be replaced. The ruptured tendon was sutured with chromicised catgut to the periosteum and aponeurotic fibres of the patella. The patient made a good recovery. The mechanism of this injury seems to be that a force acting obliquely from above downwards impinges on the upper edge of the patella, ruptures the quadriceps tendon, and, continuing to act, drives the patella downwards, so that its upper edge becomes wedged in between the tibia and the femur, while the lower edge projects towards the skin, rendering the ligamentum patellæ and the lateral extensions of the aponeurosis so tight that they hold the bone in this position, acting like the guy-ropes of a tent. In only one of the recorded cases was reduction effected by manipulation alone. In all the cases operated upon recovery took place with a good functional joint.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF
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The Induction of Labour by the Bougie Method.

Jacoby (*Arch. f. Gynaek.*, Berlin, Bd. lxxiv. Heft 2) reports on the results of 228 cases. Pelvic contraction was the indication in eighty-one cases. He points out the unfavourable results in cases induced before the thirty-fifth week, and of operative delivery after induced labour. Of the children, 65 per cent. left hospital alive, and there were three maternal deaths (hæmorrhage, sepsis, peritonitis). Excluding Cæsarean section, the results obtained were better than any of the other methods employed. The bougie method he considers superior to all others. Labour pains began on an average in twenty-four hours, and the average duration of labour was thirty-one hours. In non-urgent cases Jacoby prefers the slow method to accouchement force.

Paraffin Injections in Gynæcology.

Stolz (*Monatschr. f. Geburtsh. u. Gynaek.*, Berlin, Bd. xx. Heft 6) refers to Gersuny's cases of incontinence of urine and prolapse of the uterus so treated. In his first case, the patient, æt. 25, had lost control of the sphincter vesicæ, which was unrelieved by seven repeated plastic operations. Gersung injected paraffin into folds of prolapsed vesical mucous membrane, with the result that complete power over the bladder was regained. Stolz reports a similar case cured by the injection of paraffin melting at 42° C. round the neck of the bladder. Haeban has tried the same method in cases of cystocele, injecting 20–25 cm. of paraffin between the bladder and vagina, and then directing it into the paravaginal tissues.

The results have been encouraging, and the method deserves further trial in cases where pessary and operative treatment fail.

Cæsarean Section, and Total Hysterectomy for Retro-Cervical Myoma.

Michel (*Centralbl. f. Gynäk.*, Leipzig, No. vi., 1905) reports the following case:—P., æt. 41, 11-para, previous labours normal, last confinement two years previous to coming under observation. When admitted to hospital, labour had been in progress for some time, but the head was movable above the brim. Through the posterior formix a hard tumour, as large as a child's head, was felt blocking the pelvis. It was thought to be ovarian, but all attempts to push it above the promontory failed. Cæsarean section, with Fritsch's fundal incision, was performed, followed by total extirpation of the uterus, with the tumour, which proved to be a retro-cervical myoma. Michel discusses abdominal or vaginal enucleation as alternative methods of treatment.

Accidental Perforation of the Uterus during Curettage.

Hessert (*Am. Journ. Obst.*, January, 1905) reports a case of accidental perforation, where a loop of injured intestine escaped through the opening, necessitating the resection of 4 feet of bowel, and end-to-end anastomosis with Murphy's button. The perforation was due not to any abnormal softness of the uterine wall, but to failure to appreciate beforehand the direction of the uterine canal. Further, placental forceps were used to grasp what was supposed to be uterine contents. Hessert believes that most of the cases described as temporary paralysis of the uterus, permitting the sound to enter as far as 13–20 cms., are in reality cases of actual perforation of the uterine wall. He further believes that the entrance of the sound along the course of a normal Fallopian tube to be very rare. He describes in detail the factors predisposing to perforation, such as atrophy and softening of the uterine wall. He also discusses the importance of the subject from a medico-legal standpoint, and quotes a number of cases bearing on this. The dangers arise not so much from the actual perforation, as from infection carried into the peritoneal cavity—antiseptic fluids injected—or to visceral injuries. The treatment is in most cases expectant, operative interference being called for when signs of infection or visceral injury manifest themselves.

Dermoid Cyst of the Ovary complicating Labour.

Thomson (*Am. Journ. Obst.*, January, 1905) quotes Dsirne's and M'Kerron's statistics to show the outstanding frequency of dermoids, as contrasted with other forms of ovarian tumour associated with pregnancy. He gives a summary of cases collected from literature showing the danger of dermoids during pregnancy, and describes the following case:—P., æt. 19, primipara, in labour twenty-four hours; forceps failed to engage the head, and caused a tumour to bulge through the recto-vaginal wall. Attempts to return the tumour to the abdominal cavity failed. A transverse posterior vaginal incision was made, the tumour tapped, and three litres of fluid drawn off. The cyst was then ligatured, and removed in the usual way. A long list of references to the subject is given with the paper.

Rapid Dilatation of the Cervix by Bozzi's Dilator.

Ehrlich (*Arch. f. Gynaek.*, Berlin, Bd. lxxiii. Heft 3) reports on forty-eight cases from Leopold's klinik. In thirty-one cases the indication was eclampsia; of those, seven died—six from the severity of the attack and one from cardiac failure. Further indications were — commencing infection during pregnancy, five cases; painful contractions of the uterus, two cases; phthisis, two cases; narrow pelvis, six cases; and in the interest of the child, twice. Ehrlich does not regard placenta prævia as a suitable indication for Bozzi's dilator. In six cases only was the operation undertaken previous to shortening of the cervical canal. He warns against hurrying the dilatation. In 75 per cent. of the cases there was no subsequent laceration of the cervix. In 21 per cent. of the cases there was a slight tear produced, and in 4 per cent. considerable laceration, but in no case was there any puerperal complication.

Prolapse of the Urethra in Children.

Lamblin ("Thèse," Paris, 1903) states that two-thirds of the cases of this condition occur between the age of 1 to 15. As causes, he mentions—first, general debility, as, for example, from tuberculosis; secondly, inflammation (chiefly gonorrhœal); thirdly, increased intra-abdominal pressure. For treatment, he recommends rest, astringents, or caustic applications, surgical treatment being reserved for old-standing cases, where reducion of the prolapsed mucous membrane is impossible.

Embryoma of the Fallopian Tube.

Orthmann (*Centralbl. f. Gynäk.*, Leipzig, No. 1905) reports the following case of this very rare condition. P., æt. 33, twice pregnant, had the appendages on the right side removed by anterior colpotomy. The tube resembled an ordinary sacrosalpinx, but on opening it a solid body, dermoid in appearance, and covered with hair, was discovered. It was connected to the tubal mucosa by a thin layer of connective tissue. Orthmann thinks this body had developed from a pole cell or blastomere of "the gravid subject." Only five cases of this condition have hitherto been recorded.

THERAPEUTICS.

UNDER THE CHARGE OF

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Mobius' Antithyreodin in Graves' Disease.

In the *München. med. Wchnschr.* for January 3, 1905, two authors report their experiences with this preparation in the treatment of exophthalmic goitre. Antithyreodin is the serum of sheep from which the thyroid gland has been removed. It can be given by the mouth, in doses of 5 c.c.

Hempel's case was that of a woman, æt. 55. The disease had commenced with palpitation. There was enlargement of the thyroid and tachycardia. The serum was given every third day in 5 c.c. doses at first, but in a short time this amount was administered every second day. Improvement rapidly followed the use of the serum. The heart-action became slower, falling from 130-140 to 96, while the irregularity disappeared. The exophthalmos disappeared, and the goitre diminished in size. The general improvement was also shown by an increase in weight.

The second paper, by K. Thienger, is more interesting. He reports four cases, of which three were in women and one in a man. In the case of the three women the serum was given in 5 c.c. doses every second day, and other medication was stopped. The chief effect produced was a subjective improvement of the general condition. Objective evidence consisted in increased body-weight, diminished pulse-rate; but the struma was not appreciably diminished in any of the cases, and the exophthalmos remained unaffected.

In the remaining case the effect was much more striking. The patient was a man, æt. 20, who was admitted to hospital in a very weak condition—in fact, almost *in extremis.* Five days before, the illness had commenced, almost like an infection, with palpitation, shortness of breath, and pain in the chest. The eyes were very prominent, and a large, soft, pulsating goitre was present. The heart was dilated and enlarged. The pulse was regular, but very rapid. For three days the patient was treated with rest in bed, ice-bag, and digitalis, but the condition became steadily worse. On the fourth day the serum was begun. For the first few days it seemed to intensify the symptoms, and a distressing dyspnœa was noted. Four days' treatment produced a distinct change for the better. The goitre diminished, and the pulse-rate fell from 140 to 96. Under continued use of the serum the improvement was maintained, and the symptoms gradually disappeared. The circumference of the neck diminished from 38·5 cms. to 34·5 cms. The pulse-rate fell from 140 to 76. The cardiac condition did not alter much. The weight rose by a stone. The author does not claim that the serum is a panacea for every case of exophthalmic goitre, but in certain cases it seems to have a direct healing action, while in many instances it has an ameliorating influence.

GONOSAN.

Gonosan is a dirty green oily substance, soluble in ether, alcohol, and chloroform. It consists of the resin obtained from kawa-kawa, dissolved in sandalwood oil. It is put upon the market in the form of capsules, each containing 0·3 c.c. of the preparation, of which eight are taken in the course of the day. Applied to mucous membranes, the resin produces numbness and distinct diminution of sensation. Further, a marked blanching of the tissues is induced. When given by the mouth the drug is excreted by the urine, and is said to exert a sedative and antiseptic action. Runge (*München. med. Wchnschr.*, 1905, No. 5) states that within two or three days the pain of acute gonorrhœa disappeared when gonosan is used. The burning on passing urine and the constant desire to urinate are relieved. Within two or three days the discharge from the urethra diminishes to a marked extent, and in the course of eight to ten days the secretion ceases to be purulent and becomes more clear. At the same time the gonococci diminish in number. Gonosan administered by the mouth is not able to cure the urethral infection completely, but evidently it profoundly alters the local conditions, and makes the existence of the gonococci more difficult. The oral administration should be combined with local injections, either of astringents or of protargol. Gonosan does not upset the stomach, and causes no irritation of the kidneys.

Merzbach, *ibid.*, also speaks very highly of the combination. He gives gonosan internally and protargol locally. The gonosan relieves the pain, hinders the growth of the bacteria, and lessens the discharge. Its anaphrodisiac action is not so strong as that of heroin.

TUBERCULOUS ADENITIS TREATED BY THE X-RAY.

Pfahler (*Therap. Gaz.*, Detroit, 1905, January) believes that in the X-ray we have an agent which will cause the glands to disappear without the production of scars. This method of treatment is still in its infancy, and the results obtainable in the future are likely to prove even more successful than those of the past. Yet Dr. Bullit has been able to collect 226 cases that were treated by the X-ray. Of these, 79, or 35 per cent., were cured; 92, or 40 per cent., improved; and 55, or 25 per cent., were unimproved. These results, obtained with the faulty technique of former days, compare very favourably with the results obtained by other methods of treatment. If a previous operation has resulted in a hypertrophied scar, the rays are of use in improving the scar. The author reports a few cases which illustrate the value of the ray treatment. In the case of a young lady, treatment was given three times in the week, using a high vacuum tube at a distance of 15 inches, and with a current of about four amperes passing through the primary. The glands began to reduce in a couple of weeks, and at the end of seven weeks had almost disappeared. At the same time râles in the right apex disappeared, and her general health improved. In all, twenty-one treatments were given. In another case a gland had broken down, and the resulting abscess was incised. As the result a sinus formed. Under treatment, twice weekly for fifteen minutes at a time, the sinus healed up in a fortnight, while the other enlarged glands diminished to one-half their former size with ten treatments in seven weeks. Pfahler claims for the X-ray treatment that it offers the best cosmetic results. The danger of secondary involvement or dissemination is lessened. If a gland has suppurated, it should be incised and drained, and then exposed to the ray treatment at once. Generally speaking, cases should be treated as soon as possible.

INSANITY.

UNDER THE CHARGE OF

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Comparative Psychiatry.

This subject, which has hitherto been practically neglected, is treated of by Professor Kraepelin of Munich for the first time in the spirit of scientific inquiry (*Centralbl. f. Nervenh. u. Psychiat.*, Berlin and Leipzig, 1904, July). The author's observations were chiefly made at the asylum for the insane at Buitenzorg, in Java. The inquiry aims at discovering the differences in the manifestations of mental disorder between persons of widely distinct racial origin. A preliminary question refers to the possibility of such differences as exist being caused by climatic, dietetic, or other influences. The conclusion arrived at on this point is negative, for patients of pure European origin, born in Java, manifested precisely the same forms of mental disease as are met with in Western Europe. Alcoholic mental affections were not present among the native patients, for the inhabitants of Java do not drink alcohol; but it was surprising to find that, notwithstanding the undoubted prevalence of opium smoking and opium eating, there were no cases in the asylum attributable to the abuse of that drug. The author makes a similar statement with regard to the inmates of the large asylum at Singapore, in which city there is a large Chinese population notoriously addicted to the use of opium. Out of 370 native inmates there was not a single case of general paralysis, while among fifty male European inmates there were eight cases. The discrepancy is not explainable on the ordinarily accepted theory of the origin of the disease, for syphilis is not less common among the natives of Java than among other similarly situated peoples. It may be that the use of alcohol may augment the tendency of the European to suffer from this disease, but even this does not account for the discrepancy, which can only meantime be attributed to an inherent difference in racial disposition. Dementia præcox was extremely common, and Kraepelin was unable to detect any material difference between its clinical forms and those met with in Europe. Mania-melancholia, both in its recurrent and circular forms, was rarer among the natives, but it was nevertheless distinctly present. The agitation of mania was less developed and more monotonous, although short recurring attacks of mania were much more frequent than among Western patients. Mental depression usually presented a similar spasmodic appearance, but ideas of sinning and self-accusation were never expressed. Even in the more common forms of insanity, such as dementia præcox, the difference in constitution between Eastern and Western races had the effect of masking the mental symptoms. Thus, in katatonia the symptoms were feebly marked; auditory hallucinations were rare, and systematised delusions were either absent or faintly indicated; the acuter mental exacerbations were infrequent, while the terminal conditions mostly took the form of a doting inactivity, with embarrassment. It may be possible that these differences are due to a feebler original imagination and to a lower degree of mental development on the part of the natives; and, further, that the absence of auditory hallucinations may be the result of a lesser use of word-imagery in ordinary life. The author was naturally interested in the peculiar forms of mental aberration so common in the Malay Peninsula, namely, latah and amok. He seems to regard latah as a form of hysteria, and amok as an early katatonic symptom, at any rate in some instances, or as an epileptic manifestation. "The whole question," says the author, "of the classification of these affections must for the present remain undecided, until comparative clinical and pathological inquiries throw more light upon it. For if national and racial peculiarities express themselves in differences in religion and habits, in political and historical development, and in art and education, they must also express themselves in the clinical forms of insanity."

TRAUMA OF THE FRONTAL CONVOLUTION.

One of the most interesting and important contributions to the literature of cerebral localisation and cerebral surgery is made by Dr. F. X. Dercum of Philadelphia (*Journ. Nerv. and Ment. Dis.*, N. Y., 1905, February). It relates to the case of a young man, æt. 24 years, with a distinct history of injury and a well-marked scar over the right fronto-parietal region. His symptoms briefly were as follows:—Pain and frontal headache; generalised epileptiform convulsions, characterised by unconsciousness but without very marked convulsions; ataxia, with intention tremor of the left hand and ataxia of the left leg; hyperæsthesia of the left arm; diminished knee-jerk on left side; nystagmus of both eyes. The diagnosis was traumatic injury of the foot of the second frontal convolution. The patient was operated on, on May 24, 1900, by Dr. W. W. Keen. The dura was found adherent to the area mentioned over an area extending to about 4 or 5 cm., and it required considerable force to separate it. Pressure to check hæmorrhage at this portion of the brain produced distinct pitting, but neither puncture to the depth of 3 cms. nor an incision into the cortex revealed the presence of fluid. The patient made a perfectly smooth recovery from the operation, and went home a week afterwards. Three weeks afterwards the pain and headache had entirely disappeared, but the general physical signs were the same as previous to the operation. Five months after the operation he had an epileptiform seizure, with unconsciousness and convulsion of the arms and legs. On July 9, 1903, more than three months after operation, the patient had not had an epileptic seizure for over a year; ataxia had disappeared; both knee-jerks were normal; and there was only a slight and disappearing intention tremor of the left hand. The nystagmus persisted, however, but was more marked in conjugate deviation to the left. This case is specially interesting because of the presence of ataxia and nystagmus. It confirms clinically the experimental researches of Ferrier, Beevor, Mott, Horsley, and Sherrington. The case also teaches a valuable practical lesson as regards the occurrence of epileptic seizures. That these were not focal, but general, suggests the inference that in other parts of the cortex focal lesions do not necessarily cause limited convulsions, but that they may give rise to ordinary epileptic seizures.

Les Crises Psycholepsy.

In October of last year, Dr. Pierre Janet opened a discussion on the above subject in the Boston Society of Neurology and Psychiatry. In his address (*Journ. Nerv. and Ment. Dis.*, N. Y., 1905, January) he said that for several years Professor Raymond and he had given the name "Psycholepsy" to a certain number of mental disturbances which frequently occur in the course of neuropathic conditions, especially when they run a rapid course with a sudden onset. They are seen particularly in epilepsy, and constitute one of those psychic equivalents of the seizures which have hitherto been too often described in a confused way. The condition is one of confusion of ideas, with impairment of personal identity. Besides epilepsy, the condition is met with in obsession, the various phobias, and in *folie du doute.* These crises may be short, and followed by a more or less complete restoration of mental activity, as is usually the case with epileptics; or they may be the starting-point of long mental enfeeblement. At first there may be no mental disturbance, but gradually symptoms of delirium develop. As the case advances, the power of the will and of attention diminishes, and the subject becomes incapable of adapting himself to his surroundings. The discussion was continued by Dr. Adolf Meyer, who paid a high compliment to Professor Janet's subtle psychological distinctions, and who pled for the abandoning of too set and exclusive formulas in nosology. Dr. Walton, while agreeing in the desirability of recognising these crises as separate clinical entities, deplored the idea of identifying them all with epilepsy.

DERMATOLOGY.

UNDER THE CHARGE OF

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Recent Literature on Eczema.

The subject of eczema is one of never-failing interest and importance, and constant accessions are being made to our knowledge of its nature and the best modes of curing it. In a long series of articles, Riehl of Vienna discusses it minutely from the practical side (*Allg. Wien. Med. Ztg.*, May to August 1904). He regards it as an individual clinical diseased process, and defines it as "an inflammatory disorder of the skin, essentially superficial, and occasioning small areas of acute congestion, accompanied with exudation into the papillary layer and epidermis, whose further development is recognisable by definite phases, —papules, vesicles, oozing, crusts, formation of scales, etc., and commonly associated with sensations of itching." Its further progress consists in the evolution of fresh patches in the neighbourhood of existing ones, rather than by the marked enlargement of the old. Under the term, he includes what is by others regarded as dermatitis induced by local causes, for he says that there is a whole series of irritants capable of causing eczema in suitable individuals. The skins of such are more or less sensitive, and in them stimuli commonly borne without harm will evoke the complaint. An especially active and rapid form leads frequently to inflammatory œdematous swelling of the skin in all its layers, seen constantly on the face, hands, or genital organs, and liable to be mistaken for erysipelas. The diagnosis is easy if the finger be passed over the surface. While in erysipelas this is smooth and uniform to touch, in peracute eczema, papules, which correspond to individual points of exudation into the epidermis, are always perceptible. While holding with the Vienna school, that constitutional states have little to do with the occurrence of eczema, he grants that any damage to the general system, the exact kind of which is of no particular importance, but specially conditions which lead to anæmia, predispose to its outbreak. In infants hindrance to blood circulation and lymph absorption, by great collections of fat in the subcutaneous tissue, contribute to render their skins less resistant. A chronic predisposition to eczema is imprinted on women whose internal generative organs have been partially or totally removed. Just as in those whose ovaries have been extirpated, various functional disturbances are prone to arise, so, as a result of the larger operation, a tendency to the development of eczema is markedly aroused. The skin of the face, especially in such women, becomes sometimes so impressionable, that exposures of but a few minutes to the sun's rays, nay even to diffuse daylight, are followed by an outbreak of eczema. Such cases are the more difficult of cure, since the extreme tenderness of the skin renders impossible the employment of many useful remedies. A chronic moist or dry form is encountered at and within the hair margin on the nape of the neck. The cause of this, which is most common in women, he finds in incomplete drying of the part when washed, and subsequent friction with the clothes. It annoys by the severity of the itchiness, and demands for its cure, months, even years, of energetic treatment. Eczema of the lips, the upper in particular, is not uncommon as a result of the use of mouth washes and tooth pastes, should such contain aromatic substances, ethereal oils, or other irritating constituents. It appears to be specially frequent from the excessive use of odol. A form limited to the angles of the mouth, with fissure production and of long duration, is seen in children. It originally arises from soakage with saliva and mucus during sleep, and is apt to be met with in several members of the same family, rather pointing to communication. The cracks occasioned by eczema of the interior of the nose in children are very probably the points where the tubercle bacillus is implanted by dirty fingers, thus leading to the occurrence of lupus, so often commencing in that situation. Eczema within the nose may be the source of rosacea if limited to that organ. By properly adapted treatment the prognosis of the majority of eczemas is favourable, with the reservation that the attendant is sufficiently acquainted with the conditions required to deal with it. He must be able to determine the existing state of the disease, be conversant with the mode of action of the prescribed remedies, and be able to judge of the effect obtained. This is not easy, considering the number of substances employed, and therefore it is better to be thoroughly versed in the use of a few than to know a little about many. Internal medicines possess no direct influence on the course of eczema, they act solely by improving the general health. In acute eczema, provided there is no great tendency to oozing and crusting, the application of powder freely forms the best dressing. This may be equal parts of starch dust and talc; or, if expense is no consideration, then zinci oxidi, amyli oryzæ, pulvis lapis baptistæ, āā 15; pulv. rad. iridis flor., 10. The itching in such cases is best relieved by sopping with acidi salicylici, 0·5-1; sp. vini dil., 100; sp. Colognien. 10; or with aetheris sulph., 20; sp. vini dil., 100. When, from accumulated products or from other reasons, it is held advisable to employ media for maceration, an old friend with a slight addition will be found most valuable and particularly well borne in infants. This consists of equal parts of olive oil and lime water, with which 1 in 1000 of thymol is incorporated. This can be painted freely on hairy parts, or lint soaked with it can be wrapped on. If Lassar's paste is selected, it is important to know if it is appropriate to the case at the time. When a layer has been smeared on, it ought to be dusted over with powder. If, after a few hours, the resulting mortar-like investment adheres unchanged, its use may be continued; should, however, it be raised from the surface by exudation, it has been resorted to too early. Lassar's paste sometimes suits better, when, for salicylic acid, boric acid is substituted, as the former proves now and again too stimulating. Pustular and impetiginous eczemas of the face frequently resist obstinately the use of macerating and desiccating remedies. Then it is well to try covering a small part thinly with the tar and sulphur ointment of Wilkinson, and dusting powder freely over. If this next day shows the reddening lessened and the pustules drier, all the affected surface may be similarly dealt with. In eczema of the rectum and anus, a preparation originally recommended for hæmorrhoids is of great service in relieving the distressing pruritus. This is the unguentum zymoidini of Rosenberg, and in a 3 to 10 per cent. porportion, in some such medium as vaseline or cold cream, it is invaluable in the itching sensations in the vulvar region, often succeeding where all others have failed.

Von During of Kiel (*Munchen. med. Wchnschr.*, September 6, 1904) takes a somewhat different view, since he regards as one of the most important factors in the production of eczema, the constitutional condition of the patient. One must, however, carefully distinguish between eczematisation and eczema. External and internal irritants alike, of many kinds, can produce the change in the skin which Besnier has happily termed eczematisation. In healthy persons this abates and subsequently disappears on discontinuance of the action of the irritant, but in predisposed individuals there persists, as a sequence of eczematisation, the disease eczema. Such persons are eczematous, even though for the moment they manifest no eczematisation. Von During believes that the features of each individual case are determined in the widest sense by the soil on which the eczema develops. Thus an eczematised seborrhœa is quite distinct from an eczematisation on the skin of a scrofulous child, or that on the basis of a prurigo, or as the sequela of a dyshydrosis. The pathological changes in eczema find their expression in an intradermal œdema, particularly in a diffuse soakage of the epidermis, most pronounced in the prickle cell layers, to which Unna has applied the very appropriate term of "spongiosis." As this becomes more intense, it separates the epithelial cells, and vesicles arise; while, simultaneously, cell proliferation or acanthosis manifests itself, and contributes even more than the œdema to occasion the thickening so constantly found. As to the rôle of parasites, he affirms that we do not know any specific microbe for eczema; all those which have been isolated are common ones—staphylococci, streptococci, of varying degrees of virulence: these produce the complications such as pustulation, but never the eczematisation itself. Take the case of a child. It is quite remarkable how little the general health suffers, notwithstanding the itching and loss of rest. After a sleepless, uneasy night, it is not the child which looks worn in the morning, but the mother or nurse who has sat up with it. Yet such eczemas in infants are notoriously difficult to cure. No doubt under suitable local applications the eruption heals, but, despite all our precautions and the continuance of topical measures, it is provokingly prone to reassert itself. Still in such cases a mere change of residence, or an alteration in the milk supply, may bring about a permanent cure. He holds that Unna goes too far when he says that we ought to demand from the supporters of the nutrition theory, that by erroneous nourishment alone they should produce for us an experimental eczema. Unna himself has not been able to evoke a typical clinical pattern of chronic eczema, by introducing his morococci into the skin. And in the same way we cannot, by inoculating the tubercle bacillus, originate at will a post-mortem wart, a lupus, or a scrofuloderma.

Ludwig Mayer (*ibid.*, July 26, 1904) relates his experience of some new remedies in eczema. Lenigallol, a triacetate of pyrogallic acid, he finds, except in very obstinate forms, as perhaps that attacking the palms, remarkably effective in converting a moist eczema into a slightly reddened, scarcely itching, and moderately scaly condition of skin, in course of from two to six days. One commences with a vaseline starch paste containing 10 per cent. of lenigallol, but the proportion may soon be increased to 20 per cent. It is spread thickly on, then enveloped in wool and bandaged, or simply powdered. When renewed morning and evening, the coating is first softened with vaseline, and removed without friction. The skin becomes coloured a blackish-brown, and this staining gives the best indication of the extent of the disease. He has not observed any irritation following its use. When this stage of dry scaliness is reached, a basis for the employment of tarry preparations is formed. Thigenol is sometimes valuable as an introduction to the pure tars. This is a substitute for ichthyol, which, like it, contains sulphur intimately combined, and possesses antiseptic and absorption favouring properties. It may be used as a 20 per cent. paste or ointment. Or empyroform, a happy conjunction of oleum rusci and formaldehyde, may be made use of. It suits best as a thick lotion. ℞ Empyroformi, 15; talci, glycerine, āā 10; aq. destill., 20. This is non-irritating, and at the same time rapidly removes the last traces of itching. When such preliminary substances have been used for a time, we may proceed to the tar treatment proper. For this, as a mild and satisfactory drug, he recommends anthrasol, which is colourless, has but little tendency to irritate, and almost no odour. It may be applied as a 10 per cent. zinc vaseline paste, or dissolved in olive oil in from 10 to 30 per cent. At the same time, it is well to be cautious, in washing with water, to select only superfatted soaps of good quality, and to prohibit friction. As a sequence of scratching and varicosity, ulcers difficult to heal are apt to develop near the malleolus. The applications should be desiccating and disinfecting, and of these tannoform dusted on seems best to restrict microbic proliferation. If any oozing points are powdered over, and a cheese-cloth bandage carefully adjusted, complete healing occurs under a hard dry scab.

THE TREATMENT OF LUPUS VULGARIS BY STATIC ELECTRICITY.

SUCHIER of Freiburg (*Wien. Klinik*, Vienna, September–October, 1904) was led to try this from observing the beneficial results to an eruption on the face of a patient who was being exposed to repeated applications of the static douche. After various trials, he discovered that the nodules and patches of lupus could be destroyed and excellent cosmetic effects obtained by the following method. A fine wire is attached to an isolated head-band, so that its point, which must be kept scrupulously bright, can be gradually approximated to the skin in a vertical position, by means of an adjusting screw. This is connected with the positive pole of the static machine by a suitable covered conducting wire, the negative being in communication with some portion of the patient's body, bearing in mind that the closer to the positive the greater the intensity of the action. The distance of the needle to the skin must be reduced till a brush-like sheaf of sparks issue from it. Should a blue flame stream forth, then the needle is to be moved nearer. When the proper position is secured, the electricity is permitted to play on a spot about a quarter of a millimetre in size till it becomes black, to accomplish which a period of from five to ten minutes is necessary. The needle is then moved on to another spot or part of the same spot. The crust so produced is allowed to separate spontaneously, which it does in about a week, and the granulating surface remaining heals over in two or four more. Unless the disease is very superficial, and especially if there are crusts or ulceration, a carefully executed curetting of the surface, special attention being directed to the edges, previous to the exposure, materially facilitates the penetration of the electricity and shortens the time of treatment. Unless some point has escaped treatment, a repetition is seldom necessary. The pain is not severe, and only experienced at the first; in a minute or two sensation is dulled, hence local anæsthesia is seldom called for. A series of illustrations prove the excellence of the results.

DISEASES OF CHILDREN.

UNDER THE CHARGE OF

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Intermittent Hyperchlorhydria as an Occasional Cause of Recurrent Vomiting in Children.

Irving Snow considers that—(1) The condition known as cyclic, periodical, or recurrent vomiting in children is not so rare as is generally supposed; (2) that it is relatively easy of diagnosis, the examination of the vomited material being of the greatest importance; (3) that, at least in some cases, the gastric irritability is due to an intermittent hyperchlorhydria, a secretory neurosis, causing the sudden secretion of free hydrochloric acid and gastric juice.

Vomiting is the main symptom of the malady. The attacks occur at irregular intervals, begin with slight premonitions, continue usually a few days, and cease suddenly, leaving the patient with an unimpaired appetite and digestion. Except for those recurring attacks, the child is generally in perfect health. They differ from ordinary attacks of indigestion and gastritis—in that they commence suddenly in children with normal digestion, and who are carefully fed; in that they terminate abruptly; and in that they are separated by periods of perfect health. The disease usually begins in early childhood, from the first to the sixth year. All of the author's cases occurred in the better class of society, in nervous, highly strung children of average physique. In none of them could any dietetic error be discovered, nor had any of them been debilitated by any exhausting malady. In the intervals between the attacks the children were in perfect health, and the digestion appeared to be absolutely normal. In some cases a certain periodicity is observed in the occurrence of the attacks. The writer considers that no absolutely satisfactory explanation as to the etiology of the disease has been advanced, though he leans to the belief that it is a transitory auto-intoxication, the force of which is expended on the nervous centres governing gastric secretion and motion, and in some cases assumes an intermittent form of hypersecretion of a highly-acid gastric juice.

If this is the case, the symptoms are far more dangerous and more prolonged than in analogous conditions in the adult. Blood is often mixed with the ejecta, due to traumatism of the stomach walls from violent retching. The vomiting may be followed by rapid emaciation, great cardiac weakness, and occasionally by death. The vast majority of the cases recover; but as our knowledge of the course of the disease becomes more perfect, and its relative frequency becomes more evident, an ever-increasing number of fatalities are reported. The post-mortem findings are—necrotic changes in the gastric and intestinal mucosa, and inflammatory or irritative lesions in the kidney.

Sometimes, when the child appears to be in the most desperate emergency and apparently moribund, a sudden recovery takes place. Further, any attack may prove to be the last. Some unknown influence may so invigorate the child's vitality that the gastric crises do not recur.

No known plan of dietetics will prevent the attacks. Stomach digestion and peristalsis are temporarily arrested, and are rapidly restored when the gastric crises are over. Fatigue, excitement, anxiety, school-work, are more likely to cause an attack than indulgence at table. Sea air, country life, and no mental work are more likely to lessen the severity and frequency of the attacks than semi-starvation and medication. The condition frequently disappears at puberty. It is very difficult to estimate the result of treatment in an affection that may terminate spontaneously at any time. The alkaline treatment appears to be the most effective, and should always be tried. In dangerous conditions, nutrient enemata, chloral by the rectum, and hypodermics of morphine and strychnine may tide over a dangerous crisis.—*Am. Journ. Med. Sc.*, 1904, December.

DISTURBANCES OF DIGESTION IN INFANTS RESULTING FROM THE USE OF TOO HIGH FAT PERCENTAGES.

EMMETT HOLT, in an article on this subject (*Med. News*, Phila., 1905, January 5), maintains that quite as serious, though perhaps not quite such obvious, digestive disturbances result from an excess of fat in the milk as from too high a percentage of proteids, and he considers that the question of regulating the amount of fat in the diet is one deserving of the most careful study.

With the methods at present employed in the home modification of milk, the percentage of proteid administered is probably lower than we have calculated, to the decided advantage of the child; but it is quite otherwise, as a rule, with the fat. Even those who have given the subject of infant feeding special attention are slow to learn the infant's capacity with regard to the digestion of fat. Frequently a rich Jersey milk is substituted for an ordinary cow's milk, and the same formula for modifying the milk is followed, with the result that the child, instead of getting milk containing 4 per cent. of fat, is fed on milk with a 7 fat percentage. In some cases the physician intentionally increases the fat, almost without limit, for the purpose of overcoming chronic constipation, which is such a troublesome symptom of artificial feeding. Errors like these are very common, and their consequences may be most serious. The author records a number of cases, recently coming under his notice, to illustrate the bad effects of giving an excess of fat. It has frequently been emphasised that gastric disturbances, habitual vomiting or regurgitation of food, continued fermentation, and, finally, the production of gastric catarrh, may follow the use of too much fat, but it is not so generally appreciated that disturbance of the intestinal digestion may also occur, and that even chronic constipation may be greatly aggravated by such feeding. The hard, grey, dry stools passed under such conditions frequently consist almost entirely of undigested fat; and when, as frequently happens, more fat is added to the milk, for the purpose of overcoming the constipation, the condition, instead of being improved, is aggravated. One of the cases recorded by the author was so overfed with cream that it weighed 21 lb. at three months, and was considered a magnificent specimen of physical development and a triumph of the feeding art. He was receiving in his food not less than 6 per cent. of fat, and was gaining in weight at the rate of 3½ lb. a month. At about 8 months old general convulsions developed, followed later by tetany, laryngismus stridulus, and fatty liver. The stools were found to consist of almost pure fat. The points of interest in this case are—(1) The long period during which the child bore the high percentage of fat without disturbance; (2) the severity of the nervous symptoms; (3) the prolonged disturbance of the digestion and general nutrition; and (4) the large liver (*paté de foie gras*), and the stools, consisting of almost pure fat. Another baby had been fed with too high a percentage of fat, notwithstanding which he suffered from constipation and moderate rickets, digestive disturbances, and repeated convulsions. In another case, vomiting had been persistent almost from birth. The child was much wasted, and was rapidly going downhill, when the excess of fat in the diet was detected and corrected, and was followed by almost immediate improvement. Children differ in their capacity to digest fat, as in other respects, but there is a limit with each child, beyond which he may not safely go. If the percentage is raised above this limit for any length of time, disturbances are sure to follow.

As to how much fat may be given to infants in health, opinion may perhaps vary somewhat, and it is difficult to fix any arbitrary standard. Physicians, in order to correctly interpret the result of milk examinations, should learn to think in percentages. The writer has never seen any advantage, but often much harm, from raising the fat above 4 per cent., and he considers this the limit for the average child.

Whenever there are marked symptoms of either intestinal or gastric indigestion, the fat should be reduced much below the normal 3 or 4 per cent.

CONGENITAL STRIDOR.

HOCHSINGER, the writer of this paper, bases his opinion on the study of nearly a hundred cases in which the characteristic breathing was present. He briefly refers to the five theories which have been advanced regarding the pathogenesis of the condition, namely—(1) A congenital malformation of the laryngeal entrance; (2) the presence of adenoids; (3) enlarged bronchial glands; (4) a nervous theory, attributing the condition to a paralysis; (5) the thymus theory.

The author is a strenuous advocate in favour of the opinion that the condition is caused by hypertrophy of the thymus gland, and he verified his belief in every one of his cases by proving that the thymus was invariably enlarged. He considers that it is quite possible to demonstrate the size of the thymus during life, in infants and young children, both by percussion and radiography. Normally, the thymus is completely covered by the sternum; but when enlarged, it extends considerably beyond the sternal edges, and this enlargement can readily be demonstrated by percussion.

In twenty-three out of thirty-two cases a relationship was established between rickets and enlargement of the thymus. The enlargement of the thymus corresponds to the enlargement of the spleen, which is so often present in cases of rickets.

The stridulous breathing is present in infants during the first few months of life, and the stridor is so loud that it can be well heard at a considerable distance from the patient. Sometimes it is present at birth, but more frequently it supervenes suddenly during the first few weeks of life, and it seems to cause little, if any, distress to the child. As a rule, the stridor remains unchanged for several months, and it disappears as suddenly as it developed.

Ordinarily the characteristic breathing consists of a harsh sound, gaining its maximum intensity at the end of the inspiratory act. There is no increased frequency of respiration, and there is neither cyanosis nor dyspnœa, in the true sense of the word. There is no catarrh of the larynx, no hoarseness, no rise of temperature, and the children do not appear to be ill nor to suffer from any inconvenience. An inspiratory retraction above and below the sternum is invariably present, but these retractions are not so severe as in cases of croup, diphtheria, or capillary bronchitis. The children seem to be quite well and happy, and they develop normally; but there are many reported cases in which this curious breathing anomaly goes on to fatal suffocation, owing to a great hyperplasia of the thymus gland.—*Wien. med. Wchnschr.*, 1903, November 7.

REPORTS OF THE MEDICAL SOCIETIES.

Edinburgh Medico-Chirurgical Society.—*March* 1, 1905.—Professor Chiene, C.B., President, in the chair.—Dr. G. T. Beatson, C.B., Glasgow, read a paper on "The Etiology of Carcinoma, does it perform any Physiological Function when present in the Human Body?" Dr. Beatson first referred to some recent utterances on carcinoma, in favour of the view of its being a microbic disease. Doyen's work and that of other observers have not yet satisfied Koch's postulates. Dr. Beatson does not favour the microbic theory, but is inclined to regard cancer as a tissue vice. He regards cancer (1) as a glandular tissue doing work as a secretive tissue, (2) as cast-off degenerating cells. We can see these same two processes going on in the ovaries and testicles. Sometimes we have the appearance of cancer cells arranged as in a secreting gland. The germinal theory assumes the presence of a fluid in the body, which he calls the procreative fluid. This fluid is probably derived from the body generally, the ovaries and testicles being merely instruments for its transmission. Dr. Beatson is of opinion that the cancer arises to do the work of some other cells which have given up work. The paper gave rise to considerable discussion, mostly adverse to Dr. Beatson's views.

Edinburgh Obstetrical Society.—*March* 8, 1905.—Dr. Brewis, President, in the chair.—After numerous specimens had been shown by various Fellows, Dr. J. W. Ballantyne read a paper on a "Case of Eclampsia, in which Lumbar Puncture was performed." He pointed out that the frequent failure of ordinary methods of treatment was the cause of the introduction of new plans. In this case of a typically severe case of eclampsia in a primipara at the sixth month, he performed lumbar puncture in association with other measures. There was no return of the convulsions after the puncture, but the patient died four days later from complications. Dr. Ballantyne described the technique of the operation, and finally reviewed the literature of the subject. Dr. J. W. Ballantyne also read a paper on a "Case of Malta Fever in Pregnancy." He described the case, and then discussed the influence of Malta fever on pregnancy, and of pregnancy on Malta fever. Very commonly the patients aborted, but in this case the patient went to full term.—Professor Simpson read notes of a "Case illustrative of Heredity in Ovarian Tumours." He had operated on a woman and her two daughters for ovarian cystoma.—Dr. Malcolm Campbell read a paper on "Pathological Conditions of the Ovaries as a possible Factor in the Etiology of Uterine Fibroids." He discussed the various theories as to the cause of fibroids, and then gave an analysis of the results of macroscopic and microscopic examination of the ovaries from twenty cases of hysterectomy, contrasted with the results of a similar examination of twenty sets of ovaries obtained post-mortem. Dr. Campbell suggested the possible bearing of an internal ovarian secretion on the primary etiology of fibroids.

Glasgow Pathological and Clinical Society.—*March* 13, 1905. —The President, Professor Muir, in the chair.—Dr. J. Grant Andrew showed a large tumour of the arm.—Dr. J. Walker Downie showed two cases illustrating persistence of branchial clefts—(*a*) Patient, a woman, æt. 25. The condition was an incomplete internal fistula opening in the right posterior palatine arch. It was noticed first at the age of 19, when it burst and discharged a quantity of whitish fluid streaked with blood into the mouth. It has continued to discharge at intervals ever since. (*b*) Patient, a man, æt. 26. He was known to have had a cord-like structure in the neck since early childhood; but up to two years ago it gave him no trouble. It is now a complete branchial fistula, which discharges by an external opening about ½ in. above the right sterno-clavicular articulation, in the line of the anterior border of the sterno-mastoid muscle. The internal opening is in the right palatine arch.—Dr. J. Kerr Love showed a case of otomycosis (myringo-mycosis aspergillina). There had been middle-ear discharge for many years, but the present disease was of very recent origin. The case was unusual, in that the fungous mass occupied the middle ear instead of as usual the inner end of the meatus externus. The fungus was found to be *Aspergillus niger* or *nigricans*. Specimens of the mycelium and sporangia were shown.—Mr. A. E. Maylard showed a specimen of lympho-sarcoma of the neck, and Dr. John Anderson showed microscopic sections of the same. Patient, a man, æt. 24. The disease began as a lump on the left side of the neck six months ago. A mass of the enlarged glands, weighing 1¼ lb., was removed about six weeks ago, and already there is a large growth in the same position. The case was referred to a committee of the Society.—Dr. John H. Teacher showed naked-eye and microscopic specimens and cultures from a case of anthrax in a man, æt. 32, a paint-grinder. The entire duration of the disease was only eighteen hours. It began with indefinite feeling of malaise, then headache developed, followed by delirium, unconsciousness, and, near the end, convulsions. Clinical examination revealed nothing but slight tenderness of the epigastric region. Post-mortem, small ulcers were discovered in the stomach and intestines, which were regarded as the seat of infection. *B. anthracis* was discovered in them and in certain of the mesenteric glands, which were enlarged and hæmorrhagic. The lungs showed congestion and œdema, and there was some pleuritic effusion. There was a large, almost diffluent "septic spleen." The pia arachnoid was the seat of a diffuse hæmorrhage, universal in its distribution, but most marked over the vertex of the cerebrum and on the cerebellum. The organisms swarmed in the extravasated blood and in the interstices of the pia mater. In the blood within the vessels they were few in number. The nature of the infection was confirmed by cultures and inoculation of animals. The source of infection could not be determined.

Forfarshire Medical Association.—*March* 9, 1905.—Dr. Kinnear in the chair.—Dr. C. Kerr showed a male child, æt. 2½ years, who suffered from an unusual form of paralysis, with mental deficiency.—Dr. G. Pirie read a paper on "The Uses of the X-rays in Diagnosis and Treatment."—Dr. Colman, Broughty-Ferry, read a paper on "The Use of Nitrite of Amyl in Deep-seated Hæmorrhage." His remarks were based upon an article by Dr. Hare of Brisbane, who discovered, in treating a case of angina in a young woman, that when amyl nitrite was used during a menstrual period it caused immediate cessation of the flow. This observation led him to try its effect in other bleedings, and he found it to be of great use, especially in hæmoptysis. Dr. Colman described two cases in which he had tried it. The first case was a woman, æt. 56 years, who was still having regular monthly periods, which during the past few years had become excessive. Ergot in large doses had not been successful; curetting caused cessation for three months; while nitrite of amyl, on the second day of the period, when the discharge was becoming excessive, caused complete cessation in twelve hours. This was repeated on three occasions with similar result. The last period had been scanty in amount, and had not required treatment. The second case was a bad one of phthisis, in which there was severe hæmoptysis in the summer over a period of six weeks, where no treatment had any good effect, and morphia did the patient harm. A return of the hæmorrhage in February was promptly checked by nitrite of amyl, with no bad result to the patient. In the first case, 3 minims, by inhalation, was sufficient to cause arrest of bleeding; and though it was difficult to say how it acted, it probably did so by causing a general vascular dilatation, and thus lowering the blood pressure. This allowed clotting to take place in the uterus, and the slow return rise of pressure not being sufficient to dislodge the clots, the contractions of the uterus completed the arrest of hæmorrhage. The same amount was used in the second case. No rise of temperature took place after administration, and only a passing change in the pulse. The arrest of hæmorrhage was brought about in the same way, by a lowering of blood pressure, as takes place when bleeding stops naturally. Coughing raises the blood pressure, and causes a hæmorrhage; the loss of blood lowers the pressure to a degree until coughing can no longer cause a rise of pressure, and bleeding stops. By the use of nitrite of amyl the pressure can be sufficiently reduced without loss of blood, so that complete arrest takes place. None of the members present had any experience of the treatment, but all agreed that it seemed rational, and that good results should follow from its use.—Professor Stalker read a paper on Bright's disease.

ANALYTICAL REPORTS.

Cyllin.

(Jeyes Sanitary Compounds Co. Ltd.)

Under the term Creolin (Jeyes) we have long been familiar with a coal-tar disinfecting fluid, the reliable nature of which has never been called in question. Unfortunately, however, there be Creolins and Creolins, and many of those not emanating from Messrs. Jeyes' firm are by no means free from suspicion. In order, therefore, to safeguard the public, Messrs. Jeyes have now registered their Creolin under the term Cyllin. There are two forms, one for use as a disinfectant, the other for internal administration. This latter is known as Cyllin (medical). Both of these products have recently been subjected to many severe bacteriological tests, chemical analysis proving not to be a reliable method of ascertaining its bactericidal value. From these experiments it is conclusively proved that Cyllin is a disinfectant of great power. Thus, tested with a pure culture of *Bacillus typhosus*, it proved to be eleven times more powerful than carbolic acid. Similarly, testing it with *Bacillus pestis*, Dr Klein reports that Cyllin possesses a disinfecting power nearly thirty times as great as that of pure phenol. Equally satisfactory results were obtained by Dr. Klein in experiments on the disinfection of tuberculous sputum. Experiments have also been conducted with Cyllin (medical). A patient was given 27 minims in capsule form, daily for eight days, and it was demonstrated that no disagreeable symptoms were produced, whilst a reduction in the number of colon bacilli was obtained, to the extent of 97·5 per cent. It has also been used as an inhalation in cases of phthisis, with the result that the amount of expectoration and the number of tubercle bacilli were greatly diminished, the temperature was reduced, and the general condition of the patients greatly improved. Professor Fränkel of Halle conducted a series of experiments to ascertain the toxicity of Cyllin for animals, and reports that it is relatively limited, and in no way comparable with that which is exercised by, for instance, carbolic acid. Taken in conjunction with the remarkable efficiency of Cyllin in the disinfection of the various pathogenic bacteria, this fact must be described as extremely satisfactory. When we add that Cyllin is, comparatively speaking, a cheap preparation, there can be little doubt that its value as a disinfectant, and as a remedy for internal administration, will soon be widely recognised.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL.

The Royal Edinburgh Asylum Report.

Dr. Clouston has once again pronounced in no uncertain tones on the causal relation of alcohol to insanity, but he has not, at the same time, attempted to dispel the darkness with which the subject is obscured. It is quite clear from this and from his previous reports that he does not limit the evil effects of alcohol as a causative agent to those clinical forms of insanity which are universally admitted to be alcoholic in their origin, but that he extends it to a large proportion of ordinary and clinically diverse mental disorders. Here he is upon disputable ground; and, notwithstanding his almost unequalled experience, we take the liberty of suggesting that he is substituting hypothesis for scientific fact. The amount of available knowledge regarding the pathogeny of insanity is so slender that it can sustain nothing more secure than plausible hypotheses; and it is doing no injustice to Dr. Clouston to assert that his views are more or less pious opinions, instigated by a sincere desire to benefit his fellow-creatures. If insanity depends upon morals, or, more correctly, upon defective morals, the sooner *soi-disant* scientific alienists abandon their laboratories and assume the rôle of the minor prophets the better it will be for humanity. Dr. Clouston's *bona fides* will not be doubted by any one who knows him, and there is always the possibility that he may be right; but the day has long gone by when the scientific world is prepared to accept opinions in place of facts, from any authority, however eminent. At best, a theory of causation, however apparently certain it may be, is only a matter of probability. What, then, becomes of a theory the data of which are admittedly imperfect, or of causes which are confidently assumed to produce an effect the nature of which is not understood. For the sake of argument, let us assume that there is a scientific basis for the belief that alcohol is an efficient cause of ordinary insanity; then, applying the old and well-known formula of probability, *M* has been observed to have been an efficient cause of Z. Let all the material circumstances $n.n.$ existing at the moment of the occurrence of M have been ascertained, then the sum of the probabilities that Z is caused by M is equal to 1, or certainty. If, now, the probability that M is caused by $n.n. = \frac{1}{x}$, then the probability that Z is caused by $M = 1 - \frac{1}{x} = \frac{x-1}{x}$. The smaller $\frac{1}{x}$ is, the larger x will be, and the more will $\frac{x-1}{x}$ approach to 1, *i.e.* to certainty. But if we have direct proof that Z may occur in the absence of M, or that M may occur in the absence of $n.n.$, the probability of M being an efficient cause of Z decreases enormously. The application of the above formula to the question under discussion is obvious; for, while the terms $n.n.$ (alcohol) and Z (insanity) are known, the middle term M, the pathological link between the material circumstances and the disordered mental condition, is wholly unknown. Further, if identical forms of insanity occur in the absence of alcohol, and if many notoriously intemperate people do not become the victims of these ordinary forms of insanity, then the probability of alcohol being an efficient cause of ordinary insanity is reduced so greatly as to be valueless for practical purposes. Exactly the same argument applies to the relation of syphilis to general paralysis. The proportion of syphilitic people who become general paralytics must be infinitely small, and any unqualified statement to the effect that syphilis is the cause of this disease is misleading to the uninitiated. There may, however, be some excuse for saying that syphilis causes a well-defined disease like general paralysis, but there is none for saying that alcohol causes insanity. It would be equally accurate to say that soap is a cause of skin diseases. Probably soap aggravates some skin diseases, just as alcohol undoubtedly is harmful to the nervous system of many individuals; but something more definite than this is required before the profession can adopt Dr. Clouston's teaching on this subject, and signs are not wanting to indicate the presence of an inquiring criticism among certain sections of the general public.

Ankylostomiasis.

IF a recently reported statement made by Sir Patrick Manson is true, namely, that "epidemic ankylostomiasis, or miner's worm disease, is likely to be as prevalent in the future in this country as it now is in Germany," then a very grave danger threatens one of our most important industries.

In the mining districts of Westphalia, the disease has been for years a veritable scourge. There have been annually many thousands of cases, and a very great expenditure of money has been incurred in trying to combat its spread.

Disinfection of mines, once the disease had been introduced, proved to be useless. The most effective preventive measures were found to be education of the miners as to the nature of the affection, and the adoption of strict regulations dealing with the sanitary conditions of the mines and the employees. The pits are kept as dry and cool as possible. Suitable receptacles are provided for fæcal evacuations throughout the workings, while above ground there are model baths, w.c.'s, and drying arrangements for the clothes of the miners, who must change their clothes before returning home.

Perhaps the most important of all preventive measures instituted has been the provision of special hospitals at each colliery solely for the treatment of those affected with the parasite, and the system requiring the medical examination of all miners, and the production of a certificate of freedom from the disease before employment can be obtained at any of the mines.

Thanks to these and other sanitary precautions, it was recently reported that amongst 70,000 miners employed in 86 collieries, the number of cases had been reduced in nine months from 13,621 to 3663.

The above facts are instructive in the face of Sir Patrick Manson's statement, and the question naturally arises, in view of the enormous interests involved, Are we prepared to deal with the disease in this country? Are medical men in colliery districts alive to the threatened danger, and are they able to diagnose the disease? Do they know how to examine the fæces in a suspected case, and to recognise the parasite or its ova when present? Are colliery owners, and those chiefly interested, being educated as to what miner's worm disease will mean to them if once introduced into their districts, and as to the best means of dealing with an outbreak?

We fear the answer to these questions must be in the negative. That the danger is no remote one is shown by the fact that already one mine in Cornwall has been found to be infected, while the opinion has been expressed, by those competent to judge, that the disease may not be so rare in this country as was supposed.

The question is one which deserves the earnest attention of Government. Timely precautionary measures have enabled us to regard threatened invasions of cholera and plague without anxiety. Similar foresight may falsify Sir Patrick Manson's prediction, and prove of inestimable value to the most important trade in the country.

Society and Crime.

In "Diseases of Society and Degeneration," Professor Lydston returns to the study of the non-social man and the means that are at our disposal to render him more fit for his environment, or to place him in such a position that he will not interfere with the growth of the altruistic principles. The volume may be said to be the apotheosis of the scientific view of crime, as opposed to the old "bad man" idea as conceived by the ancient moralists. "Criminology," says our latest author, "was once a very simple subject for study. The entire field of research was covered from the inquiring, searching eyes of science by a blanket of dogma and egotistic reason—or, rather, lack of reasoning. How simple the Pharisaic doctrine, that the delinquencies of criminal man are due to the fact that he is bad—that he is not so good as we are! And how simple the remedy — to punish him, preach to him, and make him good as we are! The self-conceit and absurdity of this dogmatic view are sufficiently obvious to the thinking man." And, despite the fact that our gaols and penitentiaries show an increased proportion of criminals in every social system, our therapeutic methods remain very much on the lines laid down in the dark ages of sociology. We have banished Mrs. Gamp from the sick-room, but her male prototypes in our halls of punishment remain, as striking evidences of how little we are attempting to bring criminology into line with the other sciences. The criminal is still weighed in the moral balance, and, if found wanting, subjected to a system that attempts to inflict punishment, without keeping in view his fate as an ultimate factor in our social life. Indirectly, of course, we are all aware of the determining forces that go to the making of criminals, and yet, despite all our altruistic methods, despite our attempts to assist social evolution, the criminal class increases, and is becoming more and more a dangerous element in human progress. It has been said that society possesses as many criminals as it deserves. The efficacy of any social system is therefore measured by the extent of its criminal roll; and thus tried, it must be admitted that our present system is no better than those conceived in the nebulous days of unscientific ethics. Putting it roughly, all we do for our criminal is to give him a cell, a plank, and a bowl of skilly, and drive him further to the devil. In his suggestive volume Lydston discusses with detail the various causes—physiological, pathological, ethical, and social —that go to the making of the criminal class, and in a calm and detached way proceeds to place the conditions of affairs as they now exist, and as they might exist, before the eyes of the man who is not content to accept as final the idea of the Fall, and its antidote, the "birch-rod" theory. To every one interested in the mighty problems involved in the study we can recommend the volume under discussion as being an important step forward in the right direction. For not only are the fallacies of the old slip-shod methods discussed, but the fantasies of the ultra-material school of Lombroso and his followers. Lydston's volume is, in fact, an attempt to reach the Aristotelian "mean" in criminology, and it is only by holding that "mean" in view that any man can hope to keep on the rails in scientific research. To the outsider, looking back on all he has read of social factors and evolution, there remains the single and important fact, lost sight of by ninety-nine persons in a hundred, that crime is in itself not so much an offence against nature as one against society. Too much time has been spent in the history of mankind in persuading man to be "good" from the fear of future punishment, rather than from a recognition of man's duty to the State. If man could be made to fully realise the righteousness of the social contract, if he could realise that he is part and parcel of a great organism whose capacity for efficient work is dependent upon his own individual conduct, then we might get nearer to ultimate salvation. There can be no doubt that the power of the Church in controlling human egoism has been in the past enormous: and admitting that much of human control has been engineered under theological authority, and has, in fact, depended to a large extent upon it, it will be easily seen how the slackening of the respect for that authority, which has taken place in recent years, may have led to a slackening of that control. The moral stability of the people is for the moment in a transition stage, for the authority of the Church has not yet found a sufficient substitute in the authority of the social contract, and, accordingly, we may expect an increase of crime until the new authority becomes part and parcel of the creed of the people. But this part of the question only concerns the normal or average citizen; it does not cover the question of the large criminal class, upon whom authority of any kind has little bearing. There are far more complex problems to be discussed in dealing with them, and it is on that account that the study of criminology must, sooner or later, be a necessary part of the medical curriculum, and if Lydston's valuable contribution is able to press that matter one step forward it will not have been published in vain. The therapeutics of social disease is the most vital question in sociology, and the "unintelligent and illogical sentimentality and pharisaism of the general public, which is content to go on dealing with effects and ignoring causes," will have to be met by the united effort of science in finding out and eliminating the causes which may be found in the various strata of the social organism.

King Edward's Hospital Fund.

At the annual meeting of the General Council of King Edward's Hospital Fund for London, the Prince of Wales, as President of the Fund, moved the adoption of the report for the year 1904. In his speech he referred to one or two matters of wider interest than the mere statement of the funds received, which are worthy of the consideration of the profession in other large centres than London. We refer to his remarks upon the amalgamation of small special hospitals, and also to the question of the appropriation by teaching hospitals of part of the Fund for the purpose of providing for the medical education of the students attending the hospital school.

The growth of London and the increasing claims of charity compel all who are specially interested in hospital work to consider every suggestion which tends towards either economy or increased usefulness. The suggestion in this connection, which seems worthy of consideration is, whether hospitals which devote themselves to the treatment of special diseases should not be carried on under as few roofs as possible, and whether, as time goes on, a judicious reduction of the total number of small hospitals might not be effected with advantage. It will be at once recognised that attempts at amalgamations of this kind could only be approached after careful consideration, as those who have for many years given their time and money to maintain a hospital in which they are interested would naturally feel reluctant to consent to its absorption into a larger institution, where its identity would be lost.

With regard to the appropriation by the teaching hospitals of a part of the Fund for the purposes of medical education, we find that in view of the recommendations of a special Committee appointed to consider this question, the Council have decided to reconsider its previous policy. In other words, they will in future ask that the whole of the grants from the King's Fund may go to the relief of the sick poor, and that nothing from this source will be utilised for the training of the student. This decision has been come to from a study of the report of the special Committee, which did not find "that any special considerations had been advanced in justification of the expenditure by the hospitals on the schools." However closely the clinical training of the student of medicine is linked with the relief to the sick poor, we must admit that, though we have not seen the report of the special Committee, we concur with its decision. There are many people who are desirous of doing something for the poor, and who subscribe to the Fund on the understanding that the money will be devoted to the ordinarily accepted objects of the hospitals.

Aequanimitas.

Before returning to the land of his ancestors, Professor Osler has given to the world some food for thought. The volume of collected addresses,[1] published in the end of the year, and most appropriately dedicated to the late President of the Johns Hopkins University, may well be regarded as a parting tribute to the great country in which he has so long sojourned.

During the last decade, the author has been justly recognised as one of the most stimulating and interesting of medical orators. Every one knows how different an address, or even a sermon is, when read in cold blood, as compared with what it is when delivered, and by publishing these addresses the author boldly challenges criticism. To say that they are fresh in manner, and stimulating in matter, is to give a brief definition of their contents. While undoubtedly unequal in value and interest, the majority of these addresses are of profound importance, and many of them rise to the level of real eloquence. The fire of his Celtic forefathers is reflected upon many a page of this volume, while the tendency to melancholy, naturally inherent in his race, has been hidden by the cheery optimism produced by his environment while dwelling with the most practical people on earth.

Whether the Professor is addressing practitioners, undergraduates, or nurses, he is at all times happy in his utterances. It is impossible in a short article like this to do anything like justice to the volume before us; but one or two points may specially be referred to. With regard to the equipment of universities and the selection of teachers, some of the remarks made in the address at the University of Minnesota are admirable. "But it is a secondary matter after all, whether a school is under State or University control, whether the endowments are great or small, the equipments palatial or humble; the fate of an institution rests not on these; the inherent, vital element, which transcends all material interests, which may give to a school glory and renown in their absence, and lacking which, all the 'pride, pomp, and circumstance' are vain, this vitalising element, I say, lies in the men who work in its halls, and in the ideals which they cherish and teach." The same address ends up in a tone of lofty nobility, and we cannot refrain from quoting the final paragraph. "My message is chiefly to you, students of medicine, since with the ideals entertained now, your future is indissolubly bound. The choice lies open, the paths are plain before you. Always seek your own interests, make of a high and sacred calling a sordid business, regard your fellow creatures as so many tools of trade; and if your heart's desire is for riches, they may be yours; but you will have bartered away the birthright of a noble heritage, traduced the physician's well-deserved title of the Friend of Man, and falsified the best traditions of an ancient and honourable Guild. On the other hand, I have tried to indicate some of the ideals which you may reasonably cherish. No matter though they are paradoxical in comparison with the ordinary conditions in which you work, they will have, if encouraged, an ennobling influence, even if it be for you only to say with Rabbi Ben Ezra, 'what I aspired to be and was not, comforts me.' And though this course does not necessarily bring position or renown, consistently followed, it will at any rate give to your youth an exhilarating zeal and a cheerfulness which will enable you to surmount all obstacles; to your maturity a serene judgment of men and things, and that broad charity without which all else is nought; to your old age that greatest of blessings, peace of mind, a realisation, may be, of the prayer of Socrates for the beauty in the inward soul, and for unity of the outer and the inner man; perhaps, of the promise of St. Bernard, 'Pax sine crimine, pax sine turbine, pax sine rixa.'"

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[1] "Aequanimitas, with other Addresses to Medical Students, Nurses, and Practitioners of Medicine." London: H. K. Lewis. 1904.

Two of the addresses contained in this volume made a profound impression when they were originally published. That upon "British medicine in Greater Britain," being the address in Medicine at the meeting of the British Medical Association in Montreal, was one of the most thoughtful of modern orations, and well came from the scion of an imperial race. The other, the "Master-Word in Medicine," delivered at the University of Toronto, deals with an immense number of points of interest to every one personally. The valuable counsels,—first, "learn to consume your own smoke"; secondly, "try to make the lives of others happier"; and thirdly, "the law of the higher life is only fulfilled by love,"—these three pieces of practical admonition to the young graduate, or the senior undergraduate, are of the highest value.

ORIGINAL COMMUNICATIONS.

SOME OF THE USES OF OXYDISED PYROGALLIC ACID (PYRALOXIN) IN DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P.Ed., *Esquire of the Order of St. John of Jerusalem, Lecturer on Diseases of the Skin, University of Edinburgh.*

Pyrogallol, or pyrogallic acid, has long been favourably known as an elective destructive caustic for limited patches of lupus vulgaris, and as valuable in causing the dispersion of psoriasis, especially of the scalp, but is of too toxic a nature to be safely employed over wide areas, and is apt to evoke a troublesome dermatitis even if used on those of but moderate extent. It belongs to the category of those bodies which exhibit great affinity for oxygen, and therefore called reducing or de-oxydising. Unna held that their action was attributable to this property, and on various occasions instituted researches from this standpoint into the behaviour of several members of the group. Pursuing this line, he was led to reflect whether this wholly explained it, and in 1886 he drew attention to a modification of pyrogallic acid, one which had been thoroughly oxydised by exposure to a current of air in presence of ammonia vapour. To the brownish-black substance resulting he subsequently attached the name of pyraloxin. This he found to possess no toxic properties, nor was it liable, as a rule, to excite any dermatitis; it had ceased, in fact, to be erosive, it had passed from the keratolytic into the keratoplastic class. In this altered and mitigated form he recommended it for the treatment of psoriasis and of leprosy, and more recently, compounded into a plaster-muslin with oxide of zinc, in that of lupus erythematosus. When employing it in psoriasis, the peculiar and striking smoothness and burnish of the surface which was left on the fading of the patches led me to try it for the cure of that most obstinate and rebellious ailment, eczema palmaris. A paper embodying my observations, and containing the account of a series of illustrative cases showing its efficiency in this direction, was read by me before the Medico-Chirurgical Society of Edinburgh in December 1897, and published in the *Transactions.* Since then it has been employed by me with success in numerous instances of this obstinate affection. The following example is specially interesting, as it is that of the youngest patient who has yet come under my observation with this particular variety of eczema.

Case 1.—M. G., æt. 12; New Craighall; came to the Royal Infirmary in the middle of December 1904. She was a healthy girl, and ailed nothing save from the troublesome and painful condition of her palms. Her mother stated that the disease began as a dry, scaly spot, which, she said, resembled ringworm, somewhere about the middle of October. It was scaly and rough, and spread till all the palmar surface was involved with exception of the pulp of the fingers, which continued soft and pliant. The skin cracked into fissures which occasioned much discomfort in opening and shutting the hand. The left palm was subsequently attacked, but to a slighter degree. The hands were treated for a week by continuous poulticing with cold starch jelly containing boric acid, and then glycerin of starch, to each ounce of which 15 grs. of resorcin and oxydised pyrogallic acid had been added, was well rubbed in night and morning. When seen after six weeks had elapsed, the left palm was found to be quite well. The right was, if anything, a little rougher than it should be, and showed dark lines where the pyrogallic acid had stained the natural folds, but was cool, with a firm surface, and giving rise to no uneasiness.

Part of the efficiency of the treatment may perhaps be ascribed with some reason to the resorcin, yet it is certain that the oxydised pyrogallic acid largely contributed, as it is impossible to obtain anything like so satisfactory a result from the use of resorcin in glycerin of starch alone. The former remedy does not, however, appear to have attracted the attention its merits deserve, for almost no allusion to it is to be found in periodical literature or in systematic works devoted to dermatology. In the latest edition of Martindale and Westcott's "Extra Pharmacopœia" it is disposed of in four lines. It possesses, notwithstanding, qualities which are of very special utility in various forms of skin disease, and to some of these reference will now be made.

In the treatment of psoriasis it stands next to chrysarobin in efficiency, and in some instances and stages it exceeds the latter in value. Like chrysarobin, it is unsuited for the acute or rapidly extending phase, but when the disease has come to a standstill, or is showing distinct evidences of retrogression, its advantages are incontestable. It is well known that when chrysarobin is used in psoriasis, while it causes the disappearance of many patches or diseased areas, it seems occasionally to stimulate others into renewed activity, fresh spots cropping up even while its employment is persisted in. Should such manifest themselves, then oxydised pyrogallic acid may replace it with benefit. Like chrysarobin, it produces a whitish ring round the vanishing spot. It acts more slowly than chrysarobin, but it stains less, seldom gives rise to any very marked erythema, and its effects, as regards a tendency to recurrence, appear more lasting. It may be used in psoriasis in various ways. When the scales have been cleared off by means of baths, washing with soap or salicylic vaseline, and the surface is fairly smooth, it may be applied as an ointment, made up with vaseline in the proportion of $\frac{1}{2}$ drm. to the ounce, with 10 grs. of salicylic acid as a mordant. This is to be rubbed in once or twice a day carefully but persistently. Should the patches be very smooth, presenting little more than an erythematous blotchiness, a cleaner method is to employ a solution in benzol and acetone. Ten parts are dissolved in 20 of benzol and 80 of acetone. This dries into a firmly adherent varnish, the application of which can be renewed every day or every second day, according as the film deposited retains its attachment or not, since washing or perspiration displaces it more or less completely. In certain cases of very indolent psoriasis we may advantageously add tar to this solution, by substituting 5 parts of pix carbonis or of pix liquida for 5 of the pyraloxin.

This same solution, either simple or compound, has proved one of the best of the external remedies available for the relief of lichen planus. It in a great measure nullifies the itching, while at the same time it certainly favours the disappearance of the eruption. Few, if any, of those suggested have accomplished so much as this in procuring the absorption of the thickened purplish patches of lichen which locate themselves on the leg, and which hitherto have exhibited such pronounced tenacity.

Though no doubt helpful in lupus erythematosus, it has one cardinal disadvantage, the deep black stain which it imparts to the area to which it is applied. Lupus erythematosus is an ailment notoriously capricious as regards outward medication, but compounded into a paste after a fashion suggested to me by Unna in course of a conversation in Madrid in 1903, it has been well borne. This is made up of oxide of zinc, 10; kaolin or terra silicia, 2; oxydised pyrogallic acid, 5; and vaseline, 28.

In eczema, while in a number of cases it acts like a charm, in others, apparently equally well suited for its employment, it not only does not agree, but may even occasion notable aggravation. The most brilliant results have been obtained in cases of infantile eczema of the face, where, after soothing and cleansing the skin by repeated poultices of borated starch applied cold, followed by inunction with weak salicylic vaseline, or by the application on linen of the unguentum vaselini plumbicum, the acute stage has been got over. If to the still reddened and irritable surface a thin coating of Lassar's paste, to which 10 grs. of pyraloxin has been added, be smeared on twice a day, in not a few instances the disease has quickly subsided.

In chronic and persistent examples of staphylogenic sycosis, depilation by means of the X-rays proves to a considerable extent curative, but the good effects are not always lasting. After a variable period, with the restoration of the hair comes a recrudescence of the sycosis. In two cases which were in my ward about the same time, this was apparently averted by the use of an ointment containing pyraloxin.

Case 2.—W. M., æt. 36; pump engineman, Pumpherston; admitted 9th November 1903; a stout but rather soft-conditioned man. The sycosis had existed five years. He was in the ward two years ago, and was discharged apparently well. The treatment then consisted of exposures to the X-rays till the face was denuded of hair. Six weeks since, the trouble recurred. He traced the original onset to having been shaved. The whole of the hairy region of the face below the level of the eyebrows was involved. The margin of the eyelids was red and everted. On most of the affected part there were numerous pustules, much swelling and œdema, and some crusting, with inflammatory redness and burning heat. There was a band an inch and a half broad, extending from angle to angle of the lower jaw, devoid of hair, but at the same time showing little scar. The surface was first of all cleansed by boric starch poultices, and then exposures to the X-rays were commenced, to be interrupted once or twice for slight reactions. In all he had fifteen exposures of five minutes each before all the hairs had fallen out. There were still, however, pustules here and there cropping up in considerable numbers, when, in the end of December, he was given an ointment of oxydised pyrogallic acid, $\frac{1}{2}$ drm.; salicylic acid, 10 grs.; ichthyol, 15 minims, and vaseline, 1 oz.—to rub in twice a day. On the 7th January 1904 the whole face was smooth, the skin soft and hairless, with exception of a thin moustache, and free from pustules. When seen a year later he remained quite well.

Case 3.—D. B., æt. 25; miner, Broxburn; admitted 14th November 1903. He had suffered for six years from pustules on the face, but when admitted, his chin and cheeks were thickly covered with purulent crusts which matted the hairs, which, however, had not fallen out. Though the application of boric starch poultices occasioned a temporary cessation of pustulation, on their discontinuance this reappeared as copiously as ever. Eight exposures of five minutes each caused the hairs to fall out completely, and ten days' treatment with the same compound ointment procured entire cessation of pustulation, so that on 7th January 1904 his face was smooth, hairless, and wholly free from disease.

Lastly, pyraloxin seems to be a valuable addition to our rather scanty armamentarium for the eradication of ringworm of the scalp in children. My experience with it is still limited in this disease, and one's hopes, based on recommendations of new cures, have been so often falsified, that great caution is necessary before drawing conclusions. The following case, recently in my ward, is, at the least, encouraging.

Case 4.—J. C., æt. 5; admitted 16th May 1904. She had been treated at home for some time for pretty extensive tinea tonsurans capitis, due to the *microsporon*. When admitted, there were still several fairly large patches both in front and behind, which were scaly and showed numerous broken hairs and stumps. The hair was kept very short, the scalp washed twice daily with a fluid superfatted soap and warm water, and the following ointment diligently rubbed in. Oxydised pyrogallic acid, 10 grs.; precipitated sulphur, $\frac{1}{2}$ drm.; ammoniated mercury, 15 grs., and vaseline, 1 oz. This was continued till 9th June. On the 10th, the head, having been carefully washed, was thoroughly examined, but no trace of disease was discoverable.

Since this was written, other cases in which its advantages were incontestable have been observed. Sabouraud has drawn a number of illustrations of the process by which pityriasis develops from sections of scalps affected with *Tinea tonsurans*, due to the small-spored parasite, the so-called *Microsporon Audouini*, and has found that the inflammatory phenomena there present—the exudation of serum and the emigration of leucocytes—are in direct relation to the growth of the organism in the skin. It is evident, therefore, that any method which will assist in nullifying this disturbing influence on the progressive formation of the horny layer which prevents its attaining its due condition of perfection, must at the same time militate against the persistence of the occupation of the fungous elements in the skin. This pyraloxin undoubtedly does. Under its use in the manner described, the surface of the diseased area assumes a highly polished appearance. This favours the penetration of the remedies employed, and promotes the expulsion of the active microbic cause, contained in the hairs, from their follicles. It is thus an efficient and at the same time safe reinforcement to the means already at our disposal for coping with the disease.

INSANITY.[1]

By JOHN MACPHERSON, M.D., F.R.C.P.Ed., *Commissioner in Lunacy for Scotland.*

LECTURE IV.

IN the previous lectures of this course the subject of variation, in its relation to the origin of physical malformations, of congenital mental defect, and of the neuroses, such as epilepsy, hysteria, and alcoholism, was considered. The correlation between congenital malformation and congenital mental defect was pointed out. The relation of the neuroses to one another, their heredity and their distribution throughout mankind of all races, was insisted on. It was also shown that all these affections are genetic in origin and independent of so-called causes or influences due to the environment. For the environment is not, and cannot be, constant, while the manifestations in question are, so far as we know, universal. It was further shown that congenital malformation and congenital mental defect are due to inherent processes, the nature of which is at present unknown, acting within the fertilised ovum. It is, moreover, certain that these processes must be independent of the environment of the elements contributed by either parent, of the immediate state of health of the parents, or, with certain exceptions, such as injuries or special diseases, of the uterine environment. It is not asserted that diseases affecting the mother, or even, on rare occasions, specific affections of the father, may not deleteriously influence the growing embryo *in utero*. The fact remains, however, that in the majority of instances these defects are hereditary; that they may pass over several members of the same family, and in the case of animals, over several members of the same litter—nay, even that they pass over one or more generations, to reappear in a succeeding one. In face of such facts, it is useless to speculate upon physical causes while the great innate cause remains obscure.

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[1] "The Morison Lectures," delivered before the Royal College of Physicians, Edinburgh.

When dealing with mental defect, epilepsy, and hysteria, we had to do with comparatively simple variations. Insanity, on the other hand, is a complex of several different diseases, which have only this in common, that they have as their result or accompaniment a more or less grave disturbance of the manifestation of normal mental processes. It requires very little consideration to understand that in such a complicated congeries of functionating, inter-dependent, parts as the human body, the proper functionating of the nervous system must be liable to disturbance from a variety of causes outside itself. There are several great clinical groups into which, for the present purpose, insanity may be divided. The following table will set them forth at a glance:—

TABLE I.—*Clinical Forms of Insanity.*

I. MENTAL DEFECT.

II. CONFUSIONAL (TOXIC) INSANITY—
  1. The delirium of fevers.
  2. Alcoholism, etc.
  3. Puerperal insanities.
  4. Dementia præcox.
  5. General paralysis.

III. THE RECURRENT INSANITIES—
  1. Mania-melancholia.
  2. The neuroses.
  3. Obsessions and impulses.
  4. Paranoia.

IV. DEMENTIA (ORGANIC AND SECONDARY).

V. PRESENILE AND SENILE FORMS OF INSANITY.

A clinical classification of insanity is, in the present state of our knowledge, the only possible one, for pathology is not yet sufficiently advanced to afford a basis of division; nor is there any hope that in the immediate future our knowledge of the minute anatomy of the nervous system will be so intimate as to form the basis of a classification. Etiological and symptomatological factors form a still less satisfactory means of division. It would be as reasonable to suggest a classification of diseases of the chest, based upon the manner in which people catch cold or upon the character of the cough, as a division of the forms of insanity based upon its causes or upon the variety or intensity of the mental symptoms. There remains the sound and practical method, which has all along met with so much success in general medicine—the grouping of related facts in juxtaposition, so as to render possible a comprehensive and co-ordinated conception of disease. By adopting this method we are enabled to grasp at once the family and personal history of the patient, as well as the symptoms, and to apply to these all we know of the etiology, the pathology, the course, the duration, and the prognosis of the disease.

Confusional Insanity.—The type of confusional insanity is the delirium of fevers. It is unnecessary to describe delirium at length, for it is known to all medical men, and to the majority of the lay public. Briefly, delirium is characterised by illusions and hallucinations of the senses, by confusion and hurry of thought, by incoherent speech, by fragmentary delusions, and by physical restlessness. Whatever the cause of the delirium, at whatever age it occurs, or whatever its form, there is always present a combination of the symptoms mentioned. It is true, that in some of the deliria secondary features or different combinations of the same features are present. It is by a familiarity with these altered combinations of the same features that we are able to distinguish one delirium from another, according to their causation. Thus we can tell without much difficulty acute alcoholism from the delirium of, say, enteric fever, and that of the latter from smallpox. But in all deliria, of whatever origin, the main features mentioned are always present. It should be emphasised, that in delirium there is no constant emotional affection. If that fact were more rigorously kept in mind, there would be less embarrassing errors in diagnosis, and the classification of insanity would be simpler than it is.

There are two kinds of delirium — febrile and subfebrile. The febrile is that which accompanies various acute infectious diseases, such as the exanthemata and such visceral affections as pneumonia. The subfebrile occurs as a sequela to many fevers, as a result of various intoxications, after trauma and shocks, and as a consequence of exhaustion.

Confusional insanity is divided symptomatically into three kinds—(1) Delirium, (2) confusion, and (3) stupor.

1. *Delirium*, as we have already seen, is a result of acute toxic infection accompanied by pyrexia or fever. It occurs during the course of the exanthemata, in certain forms of puerperal fever, and also, but less frequently, in various toxic infections of the

system, in which fever and profound toxæmia are present. The mental symptoms in all such cases are identical with the delirium of fevers in general, but vary somewhat according to the nature of the infection. It seems almost unnecessary to add that the symptoms vary in each individual; some persons scarcely manifesting any mental aberration, no matter (within limits) how much the system is poisoned, while others become delirious on apparently trivial occasions. It is interesting in this connection to note the extreme liability of children to delirium. That fact, along with the fact that the liability varies so greatly among adults, teaches us the lesson of the inherent variation which exists among individuals. For if children differ from adults in this respect, one legitimate deduction must be that their cerebral organisation is less resistive and less stable. The few words which have already been said serve as a description of what I mean by delirium—the first division of confusional insanity.

2. *Confusion* is the second form of this group of insanities. It is a subfebrile delirium. The peculiar type of insanity which follows as a late symptom, after the subsidence of the acute symptoms of typhoid fever, must be familiar to most medical men who have had many cases of that troublesome disease to treat. The symptoms resemble in every particular those of delirium, save that they are less acute and that they are much more prolonged; they might be described as a chronic manifestation of delirium. There are illusions and hallucinations of the senses, marked confusion of thought, incoherence of speech, but no constant emotional state. There may be mental exaltation of a kind; often there is mental depression; more often still, a mixture of both. Besides typhoid fever, other diseases may be followed by mental confusion. Thus we find it succeeding influenza, erysipelas, phthisis, and acute rheumatism. It also frequently occurs, in susceptible subjects, as a result of prolonged exhaustion, after shock (especially surgical shock), after accidents of a severe kind, and finally, after prolonged strain, physical or mental. But we must never lose sight of the great fact, that it only succeeds such causative factors as have been mentioned in highly predisposed and neuropathic subjects. Alcohol is one of the prolific causes of a large group of confusional insanities. There are three recognised forms due to alcohol, namely—(1) Acute alcoholism (delirium tremens); (2) a more chronic confusional insanity, often attended with stupor, and similar to the mental affection which follows fevers; (3) alcoholic dementia, with or without systematised delusions of a distinctive type, and with or without paresis. In all forms of alcoholic insanity there is confusion, or, in other words, chronic delirium. These are the only forms of insanity in which alcohol exercises a distinct influence, and in which it modifies the clinical symptoms. It is

therefore highly important that there should be no dubiety in their diagnosis.

The insanities connected with pregnancy and child-bearing are wholly confusional. The term puerperal mania is a misnomer. It may be that a pure mania may coincide with any stage of the puerperium; but, in that event, the term "puerperal" is better avoided, if clearness of description is to be preserved.

Dementia præcox affects young persons of a neurotic disposition, almost without exception. According to Kraepelin, heredity has been ascertained to be present in 70 per cent. of all the cases. Over 60 per cent. of the cases are under 25 years of age; the great majority are under 20 years. Many of the subjects are intellectually bright, some of them even exceptionally brilliant; others—about 7 per cent. of the whole—are undoubtedly weak-minded. This is not to be wondered at; for the neurotic disposition is not limited to any intellectual grade, but is found in association with every variation in intelligence. Dementia præcox, which is a slow progressive disease, is a chronic confusional insanity produced by two factors, namely, a predisposing cerebral weakness and a physical intoxication. About 10 per cent. of the cases occur immediately after acute infection, such as the exanthemata. The physical auto-intoxication of the majority of the cases is indicated by the type of the insanity which is confusion, and by the destruction of the brain cells in the cerebral cortex. It is this pathological effect of the poison which renders the prognosis so grave. Only about 8 per cent. of the cases make a good recovery.

Dementia præcox manifests its symptoms under three forms, namely:—(*a*) Hebephrenia, (*b*) katatonia, and (*c*) dementia paranoides.

(*a*) The word *Hebephrenia* means "the mind of puberty." The term implies a confusional insanity—misnamed dementia—with elements of depression and exaltation, the latter being ill-defined.

(*b*) *Katatonia*, or rigidity of the muscles, is characterised by a confusion, with depression and exaltation, the latter being the better defined; and by various motor phenomena, such as catalepsy, convulsive states, automatism, and stupor.

(*c*) *Dementia paranoidea* means the presence of chronic systematised delusion. The paranoiac form of dementia præcox is characterised by confusion, owing to which the delusions are necessarily indistinct, often extravagant and changeable. They bear therefore no true analogy to the delusions in chronic systematised insanity, which will be referred to later on. Stupor occurs with frequency in all forms of dementia præcox. The elements of confusion and stupor, and the pathological changes in the cortex, leave no doubt as to the relationship of dementia præcox to the great group of the confusional insanities.

3. The third form which is included in the group of confusional insanity is *stupor*. Every case of this insanity is liable to lapse into stupor, which is a common phase of the malady. There is no stupor, in the sense in which I am now using the word, which is not connected with mental confusion. The term "melancholic" stupor is misleading, because it is founded upon a misconception of the relationship of melancholia. Stupor follows the confusion of alcoholism, of post-febrile states, of shock and exhaustion, but more especially of that very grave mental affection of puberty and early adolescence which, whether we like the name or not, we must henceforth know as dementia præcox. After infection, poisoning, profound exhaustion, or some other debilitating cause, a patient begins to show symptoms of mental depression or hebetude. This stage may last for days or for weeks. The depression may alternate with exaltation, followed by mental confusion, hallucinations, excitement, and loss of the sense of orientation. Gradually mental obtusion sets in, which soon becomes so profound that the patient lies motionless, oblivious to his surroundings and to everything else besides.

From what has been said, we see that delirium, confusion, and stupor are intimately connected with one another; that they merge into one another; that they are parts of one great clinical group which we know as confusional insanity; and, finally, that this group is a distinct group characterised by the mental symptoms which have been cursorily mentioned, and caused by definite, generally well-known, factors, namely, poisoning of the nervous system and exhaustion of various kinds.

It is necessary before passing from this group of diseases that I should say a few words on that important disease, "general paralysis." However important it may be, from a medical or social point of view, it is only important here in so far as it illustrates my subject. I shall therefore content myself by saying that general paralysis is only accidentally an insanity. As a rule, organic diseases of the nervous system are not attended by mental disturbances. But this disease is an exception, in so far as it attacks the cerebral cortex, which is the seat of the manifestation of conscious mind. It differs from ordinary forms of confusional insanity which we have been considering, in respect that its localisation of attack is limited and defined to certain parts of the brain cortex, and in the degree and severity of its virulence. The delicate nerve cells of the cortex are rapidly and extensively destroyed. The poison is so virulent that it profoundly and visibly affects almost every tissue in the body. Such a disease must necessarily have distinctive symptoms, and must differ in its clinical symptoms from other forms of toxic insanity. Its great cause is now believed to be syphilis, but it is not a syphilitic disease. It is theoretically held that the devitalising effects of the syphilitic poison upon the immunity of the body tissues result in a lowering of the vitality of these tissues, so that they are rendered incapable of resisting the invasion of bacteria or toxins which in ordinary health are innocuous, but which in disease take on a pathogenic rôle. General paralysis is a confusional insanity. Its toxic origin and pathological anatomy leave no doubt as to that, while the majority of the mental symptoms are of the confusional type.

To sum up—The confusional insanities are due to the action of poison on the nervous system, especially the brain. Their type is delirium, no matter whether the delirium is acute and of short duration or chronic and prolonged. They all result in an injury to the delicate structure of the brain cortex. That injury is more or less severe according to the nature of the poison, and according to the resistance which the brain cells offer to the action of the toxin.

If it is asked, "How do we know that there is a poison present in the blood of patients suffering from confusional insanity?" I reply that, had we no other proof than the symptoms, the pathological results, and the course of the disease, there could scarcely remain a doubt as to its existence. We are indebted to Dr. Lewis Bruce of the Murthly Asylum for direct proof of the presence of a toxin which in all probability is the direct cause of the symptoms of this group of affections. There are two main diagnostic symptoms of infection of the system by toxins, namely, pyrexia or fever and leucocytosis. In some intoxications both are present; in others, *e.g.* phthisis and typhoid fever, there is pyrexia but no leucocytosis. In others, there is leucocytosis but no marked pyrexia. To this latter group belong the confusional insanities which I have named subfebrile. Dr. Bruce's description is so important that I have asked and received his permission to quote some extracts from his published writings. It should be explained that in normal persons the number of leucocytes per c.mm. of blood is from 6000 to 10,000—they should not exceed 12,000. "Early in the disease, and coinciding with the hyper-leucocytosis (which was found on admission to be from 15,000 to 17,000), the percentage of polymorpho-nuclear cells was frequently above 70. Let me explain that an increase in the number of polymorpho-nuclear cells is considered a certain sign of toxæmia. Later in the disease, during relapses, it is quite common to get a hyper-leucocytosis of 20,000 or 30,000, with a polymorpho-nuclear percentage of 80 or even higher. A relapse generally is preceded by a fall of the leucocytosis to 10,000 or 13,000, with a low polymorpho-nuclear percentage. As the excitement increases, the leucocytes gradually rise, and the percentage of the polymorpho-nuclear cells also rises until the attack reaches its height. When such a case recovers, the leucocytosis remains high. . . . A notable feature of all these diseases is the fact that, upon recovery taking place, a hyper-leucocytosis is present for months and even years after leaving the asylum. In cases which do not recover but become chronic, the leucocytosis falls, and the percentage of polymorpho-nuclear cells is often below 50." This is a startling fact, the importance of which is far-reaching. The object of a hyper-leucocytosis is, of course, protective. The leucocytes increase in the blood for the purpose of protecting the system from the encroachments of the poison. Their rôle is always protective. The intoxication of the system does not cease when a patient has recovered from the mental disturbances manifested by the continued leucocytosis. When, however, the poison has done its worst, down come the leucocytes. The struggle is over; victory remains with the forces of destruction.

Similar changes in the leucocytes and other blood constituents, indicating indubitably a greater or less intoxication, have been shown by Dr. Bruce to exist in general paralysis, hebephrenia, and even in alcoholism. This confirms Klippel's[1] contention, who long ago held that the toxin in alcoholism was a secondary one, and that alcohol only predisposed the system to invasion by other poisons from the alimentary canal.

THE RECURRENT INSANITIES.—A sharp clinical line separates the confusional group of insanities from the group which, for purposes of distinction, I have termed the recurrent insanities. The recurrent insanities are degenerative in origin; that is to say, they occur in persons in whom the presence of an inherited neuropathic constitution has been variously estimated by competent observers at from 70 to 90 per cent. The hereditary tendency of the subjects is therefore very high—higher than in any other group of mental affections that we know of. Like the general neuroses (epilepsy, hysteria, etc.), their origin is obscure, and they occur without any apparent external cause. They manifest the inexplicable and uncontrollable periodicity of the functional neuroses. They occur in the great majority of cases for the first time in early adult life. Once they occur they have a tendency to recur, in some cases, with unfailing regularity, in others with less apparent regularity, but in all cases there is the inherent liability to relapse. In marked contradistinction to the toxic insanities, emotional disturbance is the dominant mental symptom.

We owe to the recent writings of Kraepelin a deep debt of gratitude for having pointed out to us the astonishingly simple fact that mania, melancholia, and circular insanity are not separate entities but different manifestations in the periodic recurrence of one syndrome, which he names *Manisch-Depressive Irresein.* We have unfortunately no corresponding simple English synonym. We must be content for the present to speak of the entity as "mania-melancholia." Mania and melancholia present the same prodromal symptoms; they run a course of gradual increase, maximum intensity, and final subsidence, and they both tend in the individual attacks towards recovery. Their dominant features are the profound emotional disturbance, the recurrence of the attacks, and the alternate presence of the opposite phases of mental exaltation and mental depression in the same individual. Finally, in this group there is no confusion, no obscuration of intellect, and no tendency to stupor. Until quite recently we were in complete ignorance as to the pathology of the recurrent insanities and of the neuroses. We are again indebted to Dr. Bruce for throwing a ray of suggestive light upon the whole subject. His statements are so important that I find it necessary to quote him in his own words. "All the cases of *folie circulaire* which we have so far been able to examine, exhibited depression or excitement of the simple melancholia or simple mania type. During the depressed stage we invariably found a high leucocytosis, with a polymorpho-nuclear percentage between 60 and 70. If a period of apparent sanity followed the depression, the leucocytosis still remained high, but the polymorpho-nuclear fell to about 60. When excitement set in at first, they fell to 10,000, 11,000, or 12,000, and the percentage of polymorpho-nuclear cells was also low, generally about 50. As the excitement increased the leucocytosis gradually rose, culminating at the height of the excitement, and then gradually fell to normal. . . . These observations strongly point to the fact that the depression and excitement of *folie circulaire* (mania-melancholia) are quite different from ordinary attacks of mania and melancholia (confusional insanity, dementia præcox)."[1]

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[1] *Arch. de méd.*, 1892; and *Ann. méd. psychol.*, Paris, 1894.

Further, he says: "Every case of epilepsy has shown hyper-leucocytosis during the periods not only when the patients were suffering from epileptic seizures, but even in the intervals when the patients were quite free from attacks. The most marked period of hyper-leucocytosis follows a fit or occurs during the period when the patient suffers from a series of seizures."

Does this hold good of all the recurrent insanities and the neuroses? That question cannot at present be answered, but there is a strong presumption in favour of its doing so. There is then a toxin in the blood in the periodic group of insanities which rises and falls with the occurrence of the attacks, which seems to disappear exactly as the malarial toxin does in the interval between the attacks, and which exercises a less deleterious influence upon nervous tissue than the toxins of the confusional insanities do. In the meantime, all that we can say is, that neither mania, melancholia, nor paranoia ever result from external infections, or visceral diseases. "To speak of a delirium as a mania, because it happens to be attended by excitement, is certainly a gross misuse of terms, and cannot be too strongly condemned. To designate a confusional insanity as a melancholia, merely because the delusions are distressing or painful, is equally unscientific and reprehensible. To say that a melancholia is caused by typhoid fever, or that acute mania is caused by the abuse of alcohol, is utter nonsense."[1]

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[1] Dr. Bruce's classification is different from the one used by me.

I have included paranoia (progressive systematised insanity) among the recurrent insanities. It is not, however, a periodic, but a continuous affection. There is, moreover, no hyper-leucocytosis, and, so far as we as yet know, no toxæmia. If there is a toxin, it is of an essentially different nature from the toxins we have been discussing. In paranoia, however, there is a distinct periodicity in the course of the symptoms, as evidenced by the marked remissions and exacerbations which are one of the chief clinical features of the disease. Again, paranoia is alied to mania-melancholia, in that it is a degenerative, highly neuropathic condition, arising without known cause, and of the pathology of which we are in entire ignorance. The typical form of the disease begins with a phase of depression extending over many years, and accompanied by delusions of the same depressive type, especially delusions of persecution. After a long but indefinite period, generally many years, the phase of depression and the distressing delusions which accompany it, give place to an opposite condition of mental exaltation, with delusions of a corresponding character chiefly of grandeur. It is necessary to distinguish carefully between paranoia and the dementia paranoides of dementia præcox, which is a confusional manifestation of delusions with wholly different symptoms and course. It is impossible here to enter upon a detailed description of paranoia, or to defend the position it occupies in the classifications of the leading alienists of Europe and America. There are many varieties of paranoia, many of them by no means typical; but they are all amenable, with slight apparent discrepancies, to the descriptive definition given above. It cannot be too strongly insisted on, that mania-melancholia and paranoia are in many respects identical with the neuroses. They depend upon no external causes for their origin, any more than epilepsy or hysteria do. It is interesting to observe the fact that many of the subjects of the mania-melancholia syndrome, as well as many of the subjects of epilepsy, have a weakness for alcohol, especially, as Kraepelin points out, after one or more attacks have been passed through. There can be no doubt that an intemperate indulgence in drink may precipitate an attack of mania or of epilepsy, which might otherwise have been delayed in its occurrence. Hence has arisen, probably, the mistaken idea of the causal connection of alcohol to this group of diseases. In a previous lecture, the connection between the different neuroses was illustrated by comparing the age of onset in each form. In the same way, the relationship of the functional insanities to the neuroses may be shown. Thus paranoia, in the great majority of patients, first comes under notice between the ages of 25 and 40 years. It has to be remembered, however, that the progress of this disease is slow and insidious, and that the age of actual commencement is probably very much earlier. Seventy-five per cent. of the cases of mania-melancholia begin before the age of 25; 75 per cent. of the cases of epilepsy begin before the twentieth year; 86 per cent. of the cases of hysteria before 25; and 77 per cent. of the cases of alcoholism under 30 years (62 per cent. occur under 25).

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[1] Dercum, *Journ. Nerv. and Ment. Dis.*, New York, 1901, vol. xxviii.

The next class of the recurrent insanities is that of the obsessive and impulsive group. Of the hereditary and neuropathic origin of this group there can scarcely be a doubt, and I do not know that there is any difference of opinion among specialists. It is pretty generally assumed that they are manifestations of neurasthenia, but while not disputing the theory—nay, while concurring with it to a certain extent—it may be pointed out that such an explanation does not solve the problem of their origin—it only throws us back upon the other insoluble question, "What is neurasthenia?" The imperative ideas which form the basis of all obsessions are as varied as there are thoughts in the human mind. The most common obsessions are those arising from acquired neurasthenia, and are of the nature of weakness, fear, and indecision. Such obsessions, exaggerated to any considerable extent, constitute in themselves a very serious mental affection. But when anti-social obsessions take such a firm hold of the mind, that they cannot be thrown off by the subject, the matter is more serious still, and a pathological mental state of grave import is present.

I have already dealt with the neuroses, and they will only be incidentally referred to again as occasion requires.

DEMENTIA implies a weakening of the expression of ordinary mental processes. It varies from the most partial impairment up to a complete suspension of the common characteristics of human intelligence. Dementia may be congenital, or it may succeed gross disease of the brain attended by destruction of its tissues, or it may be consequent upon organic impairment of the cortical cells (or portions of them), due to the causes which we have seen to be the origin of the great group of confusional insanities. It is not, as we might expect, a frequent consequent of the recurrent insanities. When it does succeed the latter, it is not because of a destructive toxic process, but because of a tendency to premature involution or senile brain degeneration on the part of the subject, which premature senility is one of the special marks or stigmata of the degenerate or neurotic as a class. Indeed it is a fair question to ask how far a certain proportion of dementias, occurring in comparatively early life, are not of the nature of premature involutions. The larger proportion of demented patients in asylums are the products of the confusional insanities, and more especially of dementia præcox.

PRESENILE AND SENILE FORMS OF INSANITY commence to make their appearance earlier in life than is generally supposed. Thus we find in late middle life a particular form of melancholia, which is known as "climacteric" melancholia, beginning to appear. It is a prolonged, very emotional, and somewhat unfavourable form. This is the true melancholia. There is no melancholia of early life, and no mania of late life. That is to say, that with the exception of the melancholia of the climacteric and senile periods, mania and melancholia, as isolated and uncomplicated entities, only occur as phases of the great mania-melancholia syndrome which, as a rule, makes its appearance for the first time in early adult life. No doubt such a statement as I have just made sounds dogmatic and altogether too sweeping; nevertheless, for the present, it must remain until refuted upon uncontrovertible clinical testimony. At a later age than the climacteric, the forms of insanity become of the senile type—in other words, they are dementias of involution. The symptoms are again confusional, complicated with the loss of memory, with emotional disturbances, with illusions and hallucinations of the senses, or with vague systematised delusions.

Such, then, is a brief and altogether too short résumé of the principal features of the elements of the classification which I have placed before you. In order to determine the relative frequency of the various diseases, I have prepared the following table:—

TABLE II.—*Percentage of Different Forms of Insanity admitted.*

	Cases.	Per Cent.
I. CONGENITAL DEFECT . . .	1,314	4·1
II. CONFUSIONAL INSANITIES—		
Puerperal insanities . . .	618	1·9
General paralysis	2,850	8·9
Alcholism	5,881	18·5
Dementia præcox	4,757	15·0 (44 per cent.)
III. RECURRENT INSANITIES—		
Mania-melancholia . . .	5,013	15·8
Paranoia	1,027	3·2
Epilepsy and hysteria . . .	2,607	8·3 (27 per cent.)
IV. SENILE INSANITY	5,149	16·2
V. DEMENTIA	2,500	7·8
Total . .	31,716	99·7

The two prominent features of this table are the diversity of the clinical forms which constitute the group of affections which we loosely term insanity, and the various proportions which the separate entities bear relatively to the whole group. It is manifest that their pathogeny, or causes, must be as varied as their clinical manifestations are diverse; for a glance at this table will suffice to show that insanity is not a simple affection but a group of wholly distinct affections, with only the artificial connecting link—that they all result in a disturbance of mental processes. Congenital mental defect must depend upon mal-development of the brain. In the large majority of cases, this, as we have seen, is a germinal variation, correlated to well-defined physical malformations which are known as physical stigmata of degeneration.

We have good grounds for believing that the confusional group of insanities are always associated with the presence of a toxin which acts injuriously upon the nervous system. In the subjects of alcoholism, that poison is, in the first place, alcohol followed by a secondary intoxication. In general paralysis, it is believed in a majority of instances to be a secondary intoxication, rendered possible by a previous syphilitic infection. In puerperal mania, the infection is not constant but is due to the invasion of the system by more than one micro-organism.

With regard to dementia præcox, we have seen that 70 per cent. of the subjects are hereditarily predisposed; that some of them are congenitally weak-minded; and that many of them owe their malady to the effect, in the first instance, of such infections as those of typhoid fever, scarlet fever, and perhaps phthisis and other similar diseases. After reading Jeandelize's interesting treatise on thyroid insufficiency and Lewis Bruce's articles in the *Journal of Mental Science* (1895), on the treatment of certain forms of insanity with thyroid extract, I cannot help thinking that in insufficiency of thyroid excretion, particularly of the secretion of those small but highly important glands known as the parathyroids, we have an exact parallel to the clinical picture presented in certain phases of dementia præcox. We know how important the function of the thyroid gland is in the causation of cretinism and of myxœdematous insanity, but we know nothing of the effects of partial suspension of its secreting function, or of the influence of the parathyroid gland on the mental functions, except what physiologists like Jeandelize tell us. It is suggestive that the causes which produce many of the forms of confusional insanity also produce organic or functional disease of the thyroid and parathyroid glands. These are syphilis, alcohol, tuberculosis, fevers, and various infections. The nervous results of removal of the thyroid, more especially of the parathyroid glands in animals, are briefly as follows:—Mental confusion manifested by indifference to surroundings, apathy, and depression. At other times there is displayed great agitation, accompanied by delusions of terror, illusions and hallucinations of the senses. At other times there is delirium of the maniacal type. These symptoms are followed by somnolence, rigidity of the muscles, catalepsy, coma, and death. It is significant to observe, in this connection, that some authorities consider that one of the functions of the thyroid secretion is to keep the body free from noxious organisms and their toxins. The effects of extirpation are much more serious in young animals than in those who have reached full development. It is the same in the human species. The results of imperfect development or of disease of the glands, before completed adolescence, is to arrest absolutely the growth and the function of the nervous system at the stage of supervention of the gland affection. As a consequence of operations for the total or partial removal of the thyroid gland in man, a host of nervous symptoms follow, the chief of which are tetanic convulsions (which are also invariably observed in animals after removal of the parathyroid glands). On the mental side, there have been noted "agitated" melancholia, stupor, delusions of persecution, accompanied by acute phases of excitement and depression. It is unnecessary to point out that these mental symptoms are those which we have already designated confusional. While the symptoms of cretinism and of myxœdema are known, we are at the stage of ignorance regarding the result of other forms of acquired thyroid insufficiency in adolescence and adult age. A few interesting observations of a clinical kind have, however, been made by Jeandelize,[1] Bruce,[2] Easterbrook[3] and others. From these it would seem that the symptoms of myxœdema are not necessarily present in cases in which thyroid insufficiency may be judged to be the cause of nervous disturbance; that the mental symptoms may be intermittent; that maniacal agitation, illusions, and hallucinations, delusions of persecution, and finally dementia, result from this cause. The great number of bodily changes which are directly due to thyroid insufficiency—for instance, the changes which are indicative of premature old age, of various forms of rheumatism and gout, and of arterial sclerosis—leave no room for doubt as to the important rôle which the thyroid gland exercises in the economy of the body. Those who hold, therefore, that failure of its proper secretion is the cause of climacteric melancholia and of the presenile insanities are probably not in error. If the thyroid and parathyroid glands play such an important part in the production of abnormal nervous phenomena, we may be tolerably certain that an equally important part is exercised by the other ductless glands, by the bone marrow, and by the pituitary gland, etc. In the elucidation of the causes of insanity, therefore, we have to do, not with hereditary imperfection of the nervous system alone, but also with bodily changes which are equally important.

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[1] "L'insuffisance thyroidienne," Paris, 1903.
[2] *Loc. cit.*
[3] *Brit. Med. Journ.*, London, 1900.

What we call the neuropathic constitution must imply three things—(*a*) A structural variation from the normal type of cerebral architecture, implying a gross difference in the size and arrangement of the nerve cells, or both; (*b*) structural variation in the form and functions of various bodily organs; (*c*) a diminished power of immunity on the part of the body tissues against invasion by toxins and the products of micro-organisms. Now, all these features must be correlated with the physical conformation, although we have scarcely begun to realise that supreme fact. When we do realise it ultimately, our whole conceptions will have undergone such a radical revolution, that the neuropathic constitution, so far from being an abstraction and an intangible entity such as I am trying to grope after, will have become a fact of the utmost importance in medical and social science.

THE PROGNOSIS AND TREATMENT OF EARLY PULMONARY TUBERCULOSIS.[1]

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Gentlemen,—Those of you who were present at my lecture last summer will remember that I spoke to you on the early diagnosis of pulmonary tuberculosis. I pointed out to you that it is one of the most important questions which the physician has to face, chiefly because, if we are going to do any substantial good, we must put the patient under treatment during the very early stages of the disease. I thought we could not better employ our time this afternoon than by dealing with the prognosis and treatment of this condition.

Prognosis.—It is an exceedingly difficult matter to give a definite prognosis in early pulmonary tuberculosis, because the points which have to be taken into consideration are almost innumerable.

Every one who has had experience in this matter will know how frequently cases turn out quite differently from what was expected. And yet it is highly important that we should do our best to form a correct opinion regarding the probable course a case will take, because not only are the patient's friends anxious to know, but, what is of far greater practical importance, our method of treatment will largely depend on the view we take. We will therefore consider this part of our subject rather fully, but only from a utilitarian point of view, and, as in our last afternoon, we will only deal with a comparatively early case of the fibro-caseous form of the disease. Now the first channel of inquiry we naturally turn to is the family history. It should not be left out of account in the consideration of any case. Generally speaking, the disease advances most quickly in those who have a strong inherited tendency; while, on the other hand, those cases which are probably due to adverse conditions are the most favourable. When there is a definite inherited tendency, we should inquire to what extent it exists. In the order of seriousness, the death of both parents from pulmonary tuberculosis naturally stands first; then that of the mother; and thirdly, that of the father. The loss of a brother or sister is much less serious, especially in a large and otherwise healthy family. We should not only inquire as to how many and what members of the family have been affected, but we can also get some help from ascertaining what type the disease assumed in such members.

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[1] A clinical lecture delivered at the Mount Vernon Hospital for Diseases of the Chest, 16th March 1905.

The environment of the patient is of some interest. C. T. Williams and J. E. Pollock found that country patients do better than town patients. The pecuniary means at the patient's disposal is unfortunately, in many cases, the most important question of all. I need not enlarge upon this point, for you have had experience in this regard in your own practices.

Turning to age—as a rule, when the disease occurs in childhood it runs a rapid and fatal course. In my experience, also, when it commences about puberty, especially in females, the prognosis is not so good. After 25 the disease is usually less acute, and more amenable to treatment.

After the age of 45 the condition is often only slowly progressive, and in old age the malady is usually very chronic, with little pyrexia or hæmoptysis, but with much bronchitis.

Regarding sex, men have a better chance than women, principally because child-bearing acts unfavourably. The previous history of the patient should always be the subject of inquiry. When tuberculosis is superadded to chronic bronchitis and emphysema, the case generally turns out unsatisfactorily, mainly because what is called "open-air" treatment cannot so readily be taken advantage of. Pre-existing deformity of the chest also adds to the gravity of prognosis, for it hampers free respiratory movement.

The mode of onset of the disease has been the cause of much inquiry by many observers, and some useful information has been gathered, and the following may be given as a brief summary.

An insidious onset is of good omen, as also, though to a less degree, is one of hæmoptysis. On the other hand, an acute onset is commonly followed by a progressive invasion of both lungs, and this is extremely grave.

Those in which the disease is ushered in with symptoms of laryngeal tuberculosis, or where the laryngeal complication is out of all proportion to the pulmonary, were formerly regarded as amongst the most fatal of all; but our treatment of this condition has considerably improved during the last few years, and consequently the outlook of these cases is not quite so bad. If the symptoms for which the patient has come to consult you are out of all proportion greater than the signs found on physical examination, the subsequent course of the disease is usually not favourable. Primary tuberculosis of the base is on the whole fairly favourable, unless it has been grafted on to a previous unresolved pneumonia; but remember I am here speaking of a true primary basal lesion, and not of one which is secondary to a slight lesion of the apex, for these latter cases do badly. When the primary lesion attacks the middle lobe, either on the right side or on the left, if there is one present, the outlook is decidedly bad. In conclusion, cases beginning with pleurisy often do remarkably well.

General Symptoms.—First of all, let me say that the more important facts for prognosis are those which concern the general symptoms, and not those which are related to the extent or stage of disease in the lungs as judged by physical examination. As long as the appetite is good, the tongue clean, the bowels regular, the body weight holding its own or progressing, the temperature normal, and the pulse quiet, the prognosis is favourable, no matter what is found on physical examination, though of course it is correspondingly better when such examination is found to be satisfactory; whereas, on the other hand, the prognosis is proportionately more grave in a case showing the opposite picture, unless the untoward symptoms are readily influenced by appropriate treatment. Of all the general symptoms, the state of the appetite and digestion is, taken by itself, of the greatest importance. It forms the truest index of the general condition of a patient. As long as the patient is increasing in weight, the disease is, in the vast majority of cases, not progressing; but where there are symptoms of gastric disorder, or faulty assimilation, which prove rebellious to therapeutic measures, the outlook is very discouraging. Of scarcely less importance than the state of the appetite and digestion, from the point of view of prognosis, is the temperature; indeed, some observers believe that the degree of pyrexia should rank first. Speaking for myself, I never like to give a prognosis of a case of pulmonary tuberculosis until I have observed the temperature for at least a week or ten days—and preferably for a fortnight in a hospital patient, because here we have to take into consideration the probable effects resulting from change of circumstances. Complete absence of pyrexia, when accompanied by gain of weight, diminished cough, etc., is the most hopeful sign.

The occurrence of fever in a chronic case of mild degree is often one of the earliest indications of renewed activity of the disease.

Moderate pyrexia with normal or slightly subnormal morning temperature is, comparatively speaking, very favourable. The higher the morning temperature, and the nearer it approaches the evening temperature, the worse the outlook. Fowler has pointed out that the worst form of pyrexia of all in a chronic case is the sudden occurrence of a continuous pyrexia with very slight remissions, because it usually signifies acute miliary tuberculosis of the previously unaffected parts of the lungs. A high evening temperature with morning remissions is next in the point of gravity. But we must not trust too entirely upon one feature of the case, because after periods of severe pyrexia the temperature may abate, and the disease become of a more chronic type; and, furthermore, Theodore Williams has shown that pyrexia is not incompatible with a gain of weight as long as the patient is able to eat and digest well. A persistently rapid pulse is not a good sign in any case, for it is at all events an indication of debility.

Cough in itself is not a symptom of bad omen, but profuse expectoration is. An incessant cough, especially when it causes vomiting, or interferes with a proper amount of sleep, tends to produce exhaustion of the patient. If the cause of the cough should be a catarrh of the upper respiratory passages, it is not so serious, for this is easily remedied.

Regarding the number of tubercle bacilli found on microscopic examination of the sputum, the conclusion I came to after examining many thousands of specimens during a period of nearly four years at the Brompton and Victoria Park Hospitals, was that the number of bacilli in a given case is not indicative of the extent or severity of the pulmonary lesion; but, on the other hand, their steady diminution in number, and better still, their disappearance in a case where formerly they were abundant, is a very good sign.

Hæmoptysis is a symptom which almost always excites the alarm of the patient. A fatal termination in a very early case is excessively rare, and the effects of a hæmorrhage in this stage are very slight unless the bleeding is frequently repeated. In the second and third stages their effects are very appreciable: and when there is reason to believe that a vomica is present, the immediate prognosis is very guarded, because of the probability of an aneurysm. Sir Douglas Powell has drawn attention to a condition called "recurrent hæmoptysis," where the patient has repeated attacks of sudden and severe outbursts of hæmorrhage at short intervals, not preceded by any febrile symptoms, and not necessarily followed by any extension of the disease. This is believed to occur in cases where there is a localised lesion presenting no symptoms of activity. I may as well remind you that if high feeding is kept up for a long time after the pulmonary lesion has become cured, the patient may, as a consequence, suffer from slight hæmoptysis, but it is never accompanied by pyrexia.

Physical Signs.—Although, as I have already pointed out to you, the severity of the general symptoms are of greater significance than the extent and nature of the physical signs, the results of physical examination still afford invaluable help in forming a prognosis of a case of pulmonary tuberculosis. Let me, at the outset, impress upon you this important fact, that as a general rule *the extent of a lesion is of much greater significance than the stage to which such a lesion has advanced;* that is, that a strictly localised lesion in the stage of cavitation is much more favourable than a widespread infiltration. Will you please remember this fact. I do not mean to say that it is not far better that a lesion limited in area should be in the stage of infiltration rather than that of cavitation; for, though complete arrest may follow the cavity stage, the disease has a fatal termination in the great majority of cases, although such a termination may only occur after a very long interval. Arrest certainly occurs most commonly in the stage of infiltration.

The most favourable condition to find is slight diminution in expansion, with slight diminution of resonance and of the respiratory murmur, but without adventitious sounds, and these signs being limited to one apex. The outlook is not so good when râles are present. The finer the râle the better. What are called "clicks" are supposed to be pathognomonic of early softening; when the softening becomes more advanced, more numerous, larger and more liquid crackling râles are heard. Arrest may occur when there is a limited lesion at both apices, for this condition has frequently been found on post-mortem examination in patients who have died from other causes. It is probable that in a large majority of these cases one lung became affected after the other, and probably after arrest had occurred in one. Arrest may follow after the lower lobe of the same lung has become affected, but as a general rule it does not occur when there is, say, a vomica in the upper lobe and infiltration of the upper half of the lower lobe. Such a case, however, may take upon itself the characters of a very chronic type, that is, flattening may occur and the secretion sounds may dry up. In regard to the extent of the tuberculous lesion, may I warn you that, whilst physical signs indicating extensive and definite disease of the lungs point to an unfavourable termination, occasionally we meet with cases in which rhonchi and râles are heard over the whole of the back of the lungs which clear up in a few days, thus denoting a temporary catarrh which passes off. Turning to the stage of the lesion, the appearance of flattening may have one of two meanings. If it comes on early, and there is at the same time an advance of the other physical signs, it is not of good import; but if it occurs late, and there is a diminution or disappearance of moist sounds which were formerly abundant, it is an indication that the disease is on the road to arrest. It is probably in this relation that Rühle says that extreme dulness is usually a favourable sign. You will find that a by no means small proportion of those cases which are characterised by an acute course in the early stage show marked improvement after the formation of a vomica, because the tissue which had been irremediably damaged has been expelled. It is always important to compare the length of time the patient has suffered from symptoms indicative of pulmonary tuberculosis with the extent and severity of the signs found on physical examination, because in this way we can estimate what has been the rate of progress of the disease. The condition of the unaffected lung also helps us in prognosis. If on physical examination it is found to be enlarged, and there is also evidence of increased functional activity as shown by harsh breathing, it is a good sign. Speaking for myself, I always look for this, because it often occurs long before any definite flattening at the apex of the diseased lung.

TREATMENT.—Of all the methods of treatment which have been tried in early pulmonary tuberculosis, I have no hesitation in affirming that by far the most satisfactory, in the great majority of cases, is what is called the "open-air" treatment. We must admit that in the last few months evidence has been accumulating to show that some members of the medical profession, and certainly the general public, are not so sanguine regarding its therapeutic value as they were formerly. But this is because such extravagant and unwarrantable hopes were entertained, and it does not alter the fact that its results are far in advance of those obtained by any other form of treatment. If we get our cases in the very early stage, and if there are ample means at the disposal of the patient, so as to allow of the treatment being carried on as long as it is desirable, we can promise complete arrest of the disease in a fair proportion of cases. But whatever method of treatment we adopt, we have at the outset and in all cases to carefully consider, first, what can the patient afford? and, secondly, what is our prognosis? In order to illustrate these two points, let me tell you that whenever sanatorium treatment is decided upon, six months is necessary in all cases, and in a large proportion a much longer time is required. Even after this, the patient cannot return to his ordinary mode of living for some time, so that he should have a reserve fund at his disposal. Whenever, therefore, a patient's means are limited, a much more substantial result is obtained from a prolonged period of a less expensive mode of treatment than from a shorter period of treatment at a sanatorium. The only exception to this general rule is that class of patients whom it is advisable to send to a sanatorium for a few months in order that they may learn how to more effectively carry out the same principles of treatment at home.

The next point is, What is our prognosis? Because upon it will rest the kind of treatment which should be adopted, and great judgment will be required. It is, for example, of no use sending advanced or actively progressing cases to a sanatorium. There are four modes of treatment, one of which we can choose in the treatment of early pulmonary tuberculosis—(1) A sea voyage; (2) climatic treatment; (3) treatment at a sanatorium; (4) treatment at home.

1. *A sea voyage.*—I mention this first because it can only be recommended in the smallest proportion of cases. It is much more beneficial for tuberculosis of the glands and bones than for pulmonary disease. It should never be prescribed or allowed for patients who suffer from the slightest hæmoptysis, because the great heat of the tropics is apt to bring on severe hæmorrhage. Those cases which show any pyrexia in the evening, or any signs of active disease, or who suffer from dyspepsia or diarrhœa, should also not be allowed to go. Disastrous consequences may occur in all these cases. The cases for which a sea voyage may be entertained are, first, those of perfectly quiescent disease, especially when there is anæmia, where it is important to put the general health on a firm basis; and, secondly, those of threatened pulmonary tuberculosis. For the usual very early case I think either climatic or sanatorium treatment is much to be preferred. It is necessary that the patient should be a thoroughly good sailor. A sailing-vessel is to be preferred if the right type can be got, but this is not easy nowadays, and for this reason it is generally better to recommend a steamer. The advantages of a sailing-ship are that it entails a greater length of voyage and the changes of climate are most gradual. The best trips are those round the Cape to New Zealand or Australia, or to Japan *viâ* India. The most suitable time to start is in the autumn as soon as the equinoctial gales are over, and the stay in Australia or Cape Town should be as short as possible.

2. *Climatic treatment.*—This mode of treatment is unsuitable for the acute stage of pulmonary tuberculosis in any form, cases of advanced pulmonary tuberculosis, or cases complicated with acute bronchitis, acute pleurisy, laryngeal ulceration, or intestinal ulceration. Treatment at a high altitude is the more generally used. Besides the unsuitable cases already mentioned, it is not advisable for cases where there is marked emphysema or albuminuria, or for patients who bear the cold badly, such as old people, or who have an erethistic constitution or some valvular disease of the heart. It is also contra-indicated in those patients who suffer from recurrent hæmoptysis and where there is reason to believe that a small cavity and pulmonary aneurysm exist, but it is not necessarily put out of court where the hæmoptysis is due to acute or passive congestion. It is best adapted for cases of the chronic variety of the disease and where the extent is limited, and it may even be allowed when the lesion is more widespread or when a vomica is present, provided in both instances there is an absence of

or no pyrexia. Young people who enjoy out-of-door exercise are the best subjects. The advantages of treatment at a high altitude are that it increases the appetite, so that the patient can assimilate much larger quantities of food, the air is pure and stimulates the respiratory functions, and the warm sunshine has very beneficial results. Such Alpine stations as Davos (5300 ft.), St. Moritz (6100 ft.), Arosa (6200 ft.), Wiesen (4700 ft.), or Leysin (4700 ft.) may be chosen, or some parts of America or South Africa. If an Alpine station is selected, the patient should be led to understand that health must be put before pleasure, and for a patient who cannot be trusted in this respect a sanatorium in the district is much to be preferred to an hotel. The patient should arrive there the first or second week in October, and leave at the beginning of April. He should not return to this country until the beginning of June, and therefore it is advisable for him to occupy the interval at such a level as Les Avants (3200 ft.) or Montreux. America has the advantage that a livelihood may be more readily earned there. The tablelands of California and Mexico, Colorado Springs (6200 ft.), and Manitoba (6200 ft.) are suitable. If Africa is decided upon, the locality should be at an elevation not less than 1500 ft., and not within 100 miles from the sea. The highlands of the Orange River Colony, such as round about Kimberley, Bloemfontein, or Aliwal North, are the best. I understand that a sanatorium has lately been established in the neighbourhood of Kimberley. Treatment in a warm climate, instead of at a high altitude, is as a rule to be preferred when complete arrest is no longer probable, and also in a certain proportion of other cases. It may be a moist, warm climate, such as that of Madeira, the Canary Islands, and Teneriffe; or a dry one, such as Egypt and the Riviera. The former places used to be very much in vogue for cases complicated by bronchial catarrh, but they are not nearly so frequently recommended now. The disadvantages of Egypt and the Riviera are that the mornings and evenings are cold, and the winds are chilly and frequently change, especially at Cannes. Cairo should certainly be avoided. Helouan, Assouan, Luxor, and Mena House are the best places in Egypt. The patient should arrive about the middle of November, and leave the middle of April. The most suitable cases are those in which the lesion is limited in extent and in the stage of infiltration, but where there is associated bronchitis and emphysema. The Riviera may be chosen for more advanced cases, or cases which are unsuitable for treatment at a high altitude, especially when the patient is not of a robust type. Mentone, San Remo, Hyères, and Cimiez are the best places. The large towns of Australia are as unsuitable as those of this country; certain places in the interior of New South Wales—especially Bathurst, Goulborn—but, better still, the Darling Downs in the south of Queensland, Tasmania, and certain sheltered parts of New Zealand may be allowed. I need not tell you of the health resorts in this country—Torquay, Bournemouth, Ventnor, Hastings, Falmouth, and Penzance are the best known.

3. *Treatment at a sanatorium.*—I need not dwell upon the manner of treatment adopted at a sanatorium. It is only necessary for me to indicate to you the class of cases which is suitable for this method of treatment. It should never be prescribed for advanced cases, or for early cases in an acute stage. It can only be recommended for those patients who have a reasonable prospect of complete arrest, and the temperament of the patient should be such that the absence from home and the necessary discipline of a sanatorium are easily borne.

4. *Treatment at home.*—This mode of treatment is not nearly sufficiently appreciated, and this afternoon I want to urge upon you the importance of going into all its details, because in by no means a small proportion of early cases a surprisingly good result may be obtained when it is thoroughly adopted. As an illustration of this, I am going to show you some half-dozen cases which have come under my care in this out-patient department during the last two years. In all of them I gave minute instructions, and treatment was commenced directly the disease was recognised. I will give you a brief account of one typical case:—

Case 1.—W. P., an ex-policeman, æt. 32, consulted me on 19th December 1904, complaining of cough, slight expectoration, pain on the right side, and some debility. He was a tall, well-developed man, weighing 14 st. 13¾ lb., and gave the following history:—At the beginning of July of last year he began to suffer from languor, weakness, and shortness of breath. In a few weeks' time a cough made its appearance; and on 1st August he coughed up a considerable quantity of blood. After that the other symptoms became more marked, and night-sweating and pain in the right side were superadded. On careful examination, I found very slight flattening above and below the right clavicle; the expansion was good, but the percussion note was distinctly, though only slightly, higher pitched than on the left side. The breath sounds were diminished in intensity, and there were a few small crackling râles. Posteriorly, all that could be made out was some diminution of expansion at the right apex. Treatment was commenced at once, and in fourteen days the weight was 15 st. 6½ lb., and by the end of four weeks three more pounds had been added. On examining the patient six weeks after treatment was commenced, the râles had disappeared, but there was slightly diminished percussion resonance at the apex posteriorly. To-day—that is, about three months after he came here—the patient has no symptoms beyond slight shortness of breath on exertion; the weight is 15 st. 13 lb.; and the physical signs indicate a localised emphysema at the apex of the right lung, which is compensatory to a healed tuberculous lesion.

The treatment at home consists of the following:—All hygienic measures which have as their object the keeping of the atmosphere pure, should be used. Wherever possible, the bedroom should have a southerly exposure. It should be of large size, lofty, well ventilated, and kept scrupulously clean. The walls and ceiling should be lime-washed or freshly papered. Any carpets or curtains should be regularly shaken and dusted out of doors. The floors and furniture should be kept clean by wiping with cloths which have been made damp with Sanitas. There should be no gas-lighting in the rooms. The bed should have a horsehair mattress, and should not be curtained. In order to have the air as fresh as possible, and as nearly like that of the outside, the windows should be kept constantly and widely open, and, preferably, the doors also.

The patient should be out of doors for at least eleven or twelve hours per day in the summer, and six or eight in the winter. When it is advisable to keep the patient in bed, as for example when the temperature is above 100°·4, the bed should be taken out of doors into some sheltered spot or on to a balcony. A thick London fog is no contra-indication, as we have this year proved in regard to the patients treated on the balcony of the Mount Vernon Hospital. If the weather is cold, the patient should wear thick boots and woollen socks or stockings; the hands can be protected with woollen gloves, and the head by a Balaclava helmet. A plentiful supply of blankets is indicated, and if the thermometer is very low, hot-water bottles may be necessary. The patient should wear woollen underclothing all the year round, thin in the summer and thick in the winter. Sunlight is of great value, because it improves the quality of the blood. Graduated exercise on the incline has the effect of encouraging the development of the reserve of lung in a patient the subject of pulmonary tuberculosis. The patient should start with a short ascent, then continue on the flat, and come home downhill. It is better for him not to talk while walking. The exercise should not be sufficient to cause dyspnœa or fatigue; and immediately on returning home the temperature should be taken, preferably in the rectum. If the rise is above 2°, the amount of walking must be at once reduced. No forms of violent exertion should be allowed. A patient should always be kept in bed when there is a continuous type of pyrexia, or when the evening temperature is above 100°·4. The condition of the pulse is also a guide, for when it is persistently over 100, rest should be ordered. The food is the next matter, regarding which we must give careful instruction to the patient. Personally, I do not believe in what is called "stuffing," but think more is to be gained by a moderately large amount of food. In this relation I cannot do better than quote to you the conclusions of Goodbody, Bardswell, and Chapman, which they arrived at as a result of their most exhaustive and able experimental work on the metabolism of pulmonary tuberculosis, a work which I had the pleasure of observing at the Brompton Hospital. The extract is taken from the *Transactions of the Medico-Chirurgical Society of London*, vol. lxxxiv.:—

"1. The tuberculous patients showed very satisfactory results, both clinically and experimentally, when their diets were slightly increased above the original, and since the original diets were their own selection, it is evident that the state of the appetite gives too low an estimate of their requirements. While comparatively large diets were well borne by those much below their weight, they were not so well tolerated by, nor did they give such satisfactory results in, patients up to weight and with arrested disease. In all cases, however much they were below their proper weight, the very large diets gave unsatisfactory results, as, although weight was gained, it was only at the expense of the general health, as indicated by failure of appetite, more marked digestive disturbances, increased intestinal putrefaction, and (in one case) vomiting.

"2. The mediumly large diets gave the best results, and could have been continued with advantage probably for an indefinite time.

"3. In spite of the various clinical conditions of the six patients, and the fact that the digestive system was obviously impaired in two of them at least, the digestion and absorption of both nitrogen and fats was good. This appears to be so, even in patients with high pyrexia. The absorption of fats was excellent, although very large quantities were given, *e.g.*, even with an intake of 231·32 grms. This supports the clinical observation that large quantities of fat are well borne in tuberculous dietaries.

"4. It is noticeable that, while in the diets that gave the best results experimentally, the patients complained of the least discomfort, and the onset of severe dyspeptic troubles usually coincided with a deterioration in the experimental results.

"5. In at least one case in which the disease was practically arrested, increase in the time spent out of doors, and in the amount of exercise taken, materially improved both the appetite and digestion.

"6. It appears to be advisable to diminish the amount of food as the disease becomes quiescent and the patient approaches normal weight; but even at this period he will require a more substantial diet than in health. It is not entirely advisable for the patient to put on weight too rapidly."

I always recommend patients to take a liberal helping of beef or mutton twice a day, a plentiful supply of sugary food, and also of fatty food in the shape of milk, cream, butter, eggs, and fat bacon. I find it advantageous to begin with 1 pint of milk per day for a week, increase to 2 pints during the second week, to 3 pints a day during the third week, and then to keep to this amount, or occasionally to go on to 4 pints a day. If a patient cannot take ordinary milk, whey may be tried. Koumiss is not advisable when there is active pyrexia, but is sometimes useful in other cases, perhaps especially when there is bronchial catarrh. The patient should always be warned not to swallow the expectoration, for one reason, because such a habit is one of the commonest causes of dyspepsia. He should eat his food slowly, thoroughly masticate it, and rest in the recumbent posture for about half an hour before meals and for one hour after meals. A mere lack of appetite may be caused by the presence of sweet syrups in the cough mixture, and this should be corrected. The patient should be encouraged to eat as much as he reasonably can, and for the great majority of cases an alkali with a vegetable bitter taken twenty minutes or so before meals is the best remedy. The following is a useful prescription :—

℞	Sod. bicarb.	15 grs.
	Tinct. nuc. vom.	7 minims.
	Infus. gent. co.	ad 1 oz.

Before the two principal meals of the day.

Or, when a sedative action is desired, hydrocyanic acid may be substituted for the nux vomica. In other cases, especially where there is a pale tongue, and flatulence is a prominent symptom, better results are obtained by the administration of acids, with or without strychnine, after food. When there are irritative symptoms, such as pain in the region of the stomach or vomiting, the cod-liver oil should be stopped, the bowels should be opened, and bismuth and hydrocyanic acid should be administered before meals. Sometimes morphia is necessary. Where there is a red glazed tongue, with loss of appetite and repeated vomiting, it is better to keep the patient in bed and to allow only liquid diet, and if this is not successful, it may be necessary to feed the patient by the bowel for a few days.

Tonic remedies.—Cod-liver oil is pre-eminently the best of the tonic remedies which have been used in the treatment of pulmonary tuberculosis. It occupies a position quite alone. It is of greatest value during the apyrexial periods of chronic cases, and also when we wish to clear up any intercurrent catarrhs. It is contra-indicated when there is continuous fever, or a high evening temperature, when it lessens the appetite or causes nausea and vomiting, and when there is gastric or intestinal catarrh. Under these circumstances one of its substitutes may be given. It should be taken twice a day within half an hour after meals, or, if the patient cannot digest it at these times, it may be tried before going to bed. It is best to commence with 1 drm. doses, and after a time to increase to 2 drm. doses. It is very rarely advisable to give more than this, and the amount should never exceed half an ounce. We may get some guidance in this matter by examining the stools. The oil may be taken alone—when the best way to conceal the after-taste is to chew a bit of orange-peel, or the taste may be concealed by orange wine, fresh lemon-juice, cold coffee with a pinch of salt sprinkled on the oil, or capsules. In children, Parrish's food or steel wine is a good vehicle. When the administration of oil causes eructations afterwards, sometimes the addition of pancreatine powder in the proportion of 1 gr. to 1 grm. sprinkled on the surface of the oil, either with or without a little salt, is useful, or Savory and Moore's pancreatine wine may be used as a vehicle. When the pure oil cannot be borne, we may give it in the form of an emulsion, or as a mixture with malt extract, or with creasote. When cod-liver oil in any form is contra-indicated, the best substitutes to use are a dessert-spoonful of rich cream three times a day, or malt, or pancreatic emulsion in dessert-spoonful doses, carefully stirred with milk warmed to the natural temperature, and taken two hours after food. Jaccoud has recommended glycerin in half-ounce doses, with 1 minim essence of mint and 2 drms. brandy or rum added, to be given three times a day. I have never seen any definite results follow its administration. None of these substitutes are as good as the oil itself, and it is worth while persevering with the latter in some form or other for some time. Hypophosphites in 5 to 10 gr. doses are certainly of value in young subjects. Iron in small doses may be given when there is considerable anæmia, but it should be avoided when there is a tendency to hæmoptysis; the iodide of iron should be chosen in scrofulous cases. Arsenic is one of the most valuable tonic remedies, especially when there is anæmia or associated asthma. Cacodylate of sodium is a good alternative when arsenic by the mouth is not tolerated: it acts merely as a tonic remedy.

Antiseptic treatment.—Creasote is of some distinct value. It often relieves gastric catarrh and stimulates the appetite; it diminishes the amount of expectoration and improves the cough; it is supposed to lessen tissue waste, but certainly has no specific action on the tubercle bacillus. It has an indirect germicidal action, however, because it diminishes suppuration in the walls of cavities, and is of most value in the comparatively afebrile period of the disease. The drug should be administered immediately after or before food. Milk partly conceals the taste, or it may be given either in the form of "perles" or palatinoids of 2 to 3 minims each, beginning with two three times a day, and gradually increasing to three times that amount, or with cod-liver oil.

Guaiacol has the advantage of being less disagreeable than creasote, and the carbonate of guaiacol is practically tasteless, but this drug is much more expensive than creasote.

Garlic seems to have much the same effect. It may be given as cloves of garlic chopped up and mixed with beef-tea, as powdered garlic in 3 to 10 gr. doses in capsules, or as syrup allii (U.S.P.) in 1 drm. to 2 drm. doses.

SYMPTOMS.—We have already considered the symptoms of the alimentary system.

Cough is a symptom regarding which patients are constantly asking our advice. In order to treat it successfully, and, indeed, in order to avoid doing harm to the general condition of the patient, we must go into the whole matter most carefully. It is not enough to give one of the usual stock prescriptions; in fact, such a practice is most unscientific, and the patient's digestion, which is a sheet-anchor in the treatment of pulmonary tuberculosis, is readily thrown out of gear by any such indiscretion. In every case it is absolutely necessary for us to inquire as to what time in the day the cough occurs, whether it prevents sleep, whether the secretion is expelled only with difficulty, and, above all, what is the full cause of the cough. It is only after making the most searching inquiries in all these directions that we are qualified to treat the symptom. Regarding the cause of the cough, it is surprising in what a large proportion of cases there are contributory causes which are due to other conditions than the tuberculous lesion, and these can usually be successfully treated. Chronic pharyngitis, laryngitis, tracheitis, and bronchial catarrh are perhaps the commonest of these, and they should be treated in the usual way. You must remember that a simple laryngitis is by no means uncommon in pulmonary tuberculosis. There are cases where the cough is brought on by the dryness of the throat, resulting from the administration of belladonna for the night-sweating. The stomach is frequently the main source of the cough, and I have also seen cases where a constant dry hacking cough has proved to be due to pleuritic irritation, for it disappeared on applying counter-irritation to the apex of the lung, and on strapping the base.

Having excluded these and any other extraneous causes, we must turn to the treatment of cough which is due to the lung condition. In the first place, I would very strongly recommend you to avoid cough mixtures as far as possible, especially those containing sweet syrups. They are very apt to have a damaging influence upon the appetite, and to lead to disorders of digestion. Simple lozenges are less injurious, and should always be tried first. The trochiscus glycyrrhiza is a very good one.

The cough which occurs the first thing in the morning, and which is accompanied by expectoration, is useful, and should be encouraged. It may be much aided by a cupful of hot milk or cocoa or tea, and such a remedy should always be tried for the same kind of cough which occurs when the patient lies down at night. I even prescribe it as a first resort for the cough which is troublesome during the night, and it is quite a convenient plan for the patient to have a spirit-lamp and small saucepan at the bedside. This simple therapeutic measure is quite sufficient in a large proportion of cases of early pulmonary tuberculosis. Should this not be sufficient, a warm alkaline draught is the best addition, such as the following :—

℞ Sodii bicarb.	10 grs.
Sodii chloridi	5 ,,
Ammon. carb.	3 ,,
Sp. chloroformi	5 minims.
Aq. anisi	ad 1 oz.

In a wineglassful of warm water or milk.

This prescription is of greatest service when there is accompanying bronchitis.

In a certain number of cases of early disease where there is a troublesome cough, a small blister or iodine applied to the subclavian region of the affected side often affords relief. An irritable and ineffectual cough persisting during the day, and where there is only a very scanty expectoration resulting from prolonged efforts, is best treated by impressing on the patient the importance of restraining the cough somewhat, and by the use of inhalations of menthol, creasote, ol. eucalypt., or ol. pini sylvestris. One of the best formulæ is that of Sir Douglas Powell, and which consists of—

℞ Eucalypt. or pine oil	3 drms.
Oil of bitter almonds	1 drm.
Sp. chloroformi (double strength)	1 oz.

Sig.—Ten to fifteen drops to be inhaled half an hour after the first morning coughing, in the middle of the day, and in the evening.

Dr. Coghill's famous formula is the following :—

℞ Tinct. iodi aethereal	2 drms.
Acidi carbolici	2 ,,
Creasote vel thymol	1 drm.
Sp. vini rect.	ad 1 oz.

I have found the following prescriptions very useful :—

℞ 20 per cent. alcohol solution of menthol.
10 minims for an hour or so on the sponge of an inhaler ;

or,

℞ Creasote, 20 per cent. alcohol solution of menthol.
Sp. chloroformi.
āā equal parts.
20 minims for an hour or so on the sponge of an inhaler.

If these measures fail, a 2 per cent. solution of cocaine or menthol sprayed on the back of the throat is often efficacious ; and failing these, ipecacuanha and potassium or sodium bromide are indicated. It is extremely rare, and only after all other means have been exhausted, that anodynes are justifiable for this type of cough. When what may be called the ordinary cough of pulmonary tuberculosis is of frequent occurrence during the day, it is sometimes, though not often, advisable to give such drugs as ammon. carb., ipecacuanha, squills, and senega. If the expectoration is peculiarly tenacious, ammon. chlor. should form a part of the prescription; and when there is a spasmodic element, iodide of potassium is a valuable adjunct. As a rule, it is only in the later stages of the disease that the secretion is excessive, and in these cases the internal administration of the balsams or the inhalation of antiseptics, such as creasote or turpentine, are the best remedies.

When the cough is so troublesome at night as to prevent the patient from sleeping, and to cause consequent exhaustion, and the other remedies which I have already spoken of are not sufficient, it is necessary to give a lozenge or linctus containing opium in some form. The troch. morph. or troch. morph. et ipecac. is useful. Regarding a linctus, codeia is not so apt to upset the stomach as morphia. The following are common prescriptions:—

℞	Codeina	$\frac{1}{6}$ gr.
	Acidi citrici	5 grs.
	Sp. chloroformi	5 minims.
	Mucilag. acac.	1 drm.

℞	Liq. morph. acet.	7 minims.
	Acid hydrocyan. dil.	2 ,,
	Oxymel. scillæ	āā $\frac{1}{2}$ drm.
	Aquæ	

When the patient suffers from fits of coughing, which terminate in vomiting, after a meal, he should be kept perfectly quiet after taking food, any catarrhal condition of the stomach should be treated, and if this is not successful, a mixture containing 5 grs. of alum and 5 minims of liquor potassii taken shortly before meals often relieves this troublesome symptom.

Hæmoptysis.—If in the early stages of the disease the expectoration is only slightly coloured, it is not advisable to treat it. When the hæmorrhage is more marked, it is necessary to employ therapeutic measures. Rest in bed is absolutely necessary. The effect of rest is to slow the circulation, to lower the blood pressure, and to diminish the movement of the lungs. The patient should be in the recumbent posture, with the head and shoulders slightly raised.

Any unnecessary movement or talking should be strictly forbidden. The room should be cool, and the clothing light. If the patient feels chilly, warmth should be applied to the feet.

Stimulants of all kinds must be avoided. The food must be cold, and limited to a pint and a half of milk per day, 2 oz. meat essence, 4 oz. bread, and $\frac{1}{4}$ oz. butter, the two latter to be eaten as small, thin sandwiches. A large icebag may be applied to the chest. Probably its only value is to prevent the patient sitting up. In a similar way, the only result from sucking small quantities of ice is that it may relieve the cough, and the patient is soothed, because he thinks something is being constantly done for him. One of the most important indications in the treatment of hæmoptysis is to lower the blood pressure by means of free purgation. Saline purgatives are the best, such as a drachm of sulphate of magnesia and 20 grs. of sulphate of soda every four hours.

If the cough is at all severe, it should be relieved by the administration of a linctus. When the hæmorrhage is profuse, a hypodermic injection should be given immediately, and it may be necessary to repeat it, and to keep the patient in some degree under the influence of the drug some days. Regarding the employment of hæmostatics, the only one from which I have seen any possibly good result is oil of turpentine, which may be tried in 10 minim doses given in capsules. Tincture of hamamelidis in 20 to 60 minim doses, and also ergotin hypodermically in 1 to 3 gr. doses, are believed by some to be of value.

Pyrexia.—One of the most interesting problems in pulmonary tuberculosis is the treatment of the pyrexia by means of rest. A cardinal rule which should always be followed is, that the patient should be kept in bed when there is a continuous type of temperature, or when the evening temperature is above 100°·4. I also believe it is advisable to try the effects of rest on a large proportion of cases where the temperature is not so high, for I have observed that a week or two of rest in bed under "open-air" conditions is often effective in reducing a long-standing, moderate pyrexia. The diet should be carefully regulated, and cod-liver oil is, as a rule, contra-indicated; one of the substitutes mentioned may be tried. Sponging with tepid water, to which some eau de Cologne or toilet vinegar may be added at the time when the temperature is highest, is by far the best way of treating pyrexia when rest is not sufficient. The only drug which may be tried is quinine, though it is apt to disturb the stomach. It should be given in a single dose of 20 to 30 grs., or four or five smaller doses at short intervals, some hours before the temperature usually rises Other antipyrites should not be used.

Night-sweating.—The last meal of the day should be light, and easily digestible, and at bedtime the patient should be sponged with vinegar and tepid or cold water. The following prescription may be used for such a purpose:—

℞ Dil. acetic acid	1 pt.
Water at temp. of 85°	6 pts.
Eau de Cologne	$\frac{1}{4}$ pt.

If this is insufficient, drugs must be employed. It is best to start with small doses of quinine and digitalis, and if this fails, oxide of zinc with extract of belladona may be prescribed in the following form:—

℞ Zinci oxidi	2 grs.
Belladon. extract	$\frac{1}{6}$ gr.
	F. pil.

Sig.—One or two pills at bedtime when required.

Atropine in $\frac{1}{100}$ to $\frac{1}{60}$ gr., also in the form of a pill, is perhaps superior. Other well-known remedies are arseniate of iron ($\frac{1}{6}$ to $\frac{1}{3}$ gr.), sulphuric acid, pilocarpine, picrotonine, and agaricin. It is well to warn you that the patient should sleep in a thin flannel gown, which should be changed, and the skin thoroughly dried. If there are signs of exhaustion, a drink of hot milk is useful.

Intercurrent pleurisy.—If this occurs in the upper part of the chest, it should be painted with epispastic solution or equal parts of the liniment and tincture of iodine. If the base is affected, the application of a broad piece of strapping to one side of the chest, and extending for one or two inches beyond the middle line anteriorly and posteriorly, often affords relief.

Laryngeal tuberculosis.—The treatment of this condition does not lie within my province, but I would remind you that rest is of the highest value. The patient should not talk when out driving or in a noisy room. It is highly important that a skilled laryngologist should be consulted, in order to see if local treatment is advisable.

POISONING IN SCOTLAND, TO THE YEAR 1625.

By A. Francis Steuart, *Advocate.*

Poisoning[1] has never been a common crime in Scotland. The Scot has always been prone to dispose of his enemies in a shorter and surer way. Kirkpatrick was ready to "mak sikkar" that the Red Comyn was slain with his dagger. Riccio was stabbed and thrown downstairs, and deeds of violence figure on every page of Scottish history, but among them poison rarely is mentioned, and recalcitrant wives were accused of getting rid of their husbands, not so often by poison or enchantment, as by having them "smoorit," or smothered, in feather beds. But though we may, and indeed must, concede the rarity of poisoning as a generality,—for in Scotland we have had no Borgia, no Medici, no Brinvilliers,—yet attempts to use poison were by no means unknown: and it is these I propose to recount, not dwelling, indeed, on the methods themselves used in the process,—for these were, from the want of medical knowledge at the time, little examined into, and, as more modern historians point out, sudden death alone gave rise to the rumour of poison,—but narrating the cases and circumstances where our ancestors suspected and believed that poison had been used, in as short a manner as is consistent with the subject.

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[1] I am indebted to my friends Mr. D. M. Barcroft and Mr. Austin Priestman for their kindness in discussing certain points in this essay with me.

The old ballad of the "Cruel Step Minnie" gives the popular conception of the working of violent poison which had been given by a lady to rid her of an undesired relative:—

"'O where hae ye been this leelang day,
My bonnie wee croodlin doo?'
'I hae been to see my Stepminnie:
Mammy, mak my bed noo.'

'And what did your Stepminnie gie you to dine,
My bonnie wee croodlin doo?'
'She gaed tae me a bonnie wee fish a' streakit wi' green and blue:
Mammy, mak my bed noo.'

'And what did you do wi' the banes o' the fish,
My bonnie wee croodlin doo?'
'I gaed them to my wee wee dog:
Mammy, mak my bed noo.'

'And what did your dog when he eated the banes,
My bonnie wee croodlin doo?'
'He streatched out his wee wee legs and deed,
Mammy, as I do noo.'"

This legend is found in many other forms,[1] and is akin to the song "Lord Randal," where the poison is administered in "eels boiled in broo," and where the dogs "swelled till they deed" on eating the remainder; and this ballad, sometimes styled Lord Ronald or Lord Randolph, has by conjecture been associated with the suspicious death of King Robert (Bruce's) nephew, Thomas Randolph, Earl of Moray.

The Earl of Moray, on Bruce's death, was made Regent or Governor of Scotland during the minority of his young son, King David II., and when in the zenith of his power and popularity he died suddenly in 1332; by so doing he *ipso facto* gave rise to the belief that he was poisoned. This belief Lord Kames, in a most unnecessary bit of special pleading, tried to combat.

Barbour's "The Brus" (xx.) sings his death thus—

"The gude Erll gouernit the land,
And held the pure weill to warrand;
The law sa weill manteinyt he,
And held in pess swa the cuntre,
That it wes neuir led or his day
So weill, as I hard ald men say;
Bot syne alass! poysonyt wes he.
To se his ded wes gret pite."

and Hector Boece, in his "Croniklis of Scotland,"[2] definitely throws all the blame on Edward III. of England, who, he says, "tuk purpos to sla him be vennome." He reports that after a long search the king found for this design a monk, "for oftimes men of that ordoure hes na respect to schame nor justice, bot cloke's thair wickit lyfis under fenyeit schaddow of ane coule," and instructed him, "as he had bene ane medicinar havand speciall remeidis agains the gravell: for in that infirmitie Erle Thomas was hevely tormentit." The monk and a colleague came to Scotland with the fame of successful doctors, but having "vennomus potionis among his othir seropis," and eventually was allowed to try his hand on Earl Thomas. "The monk tuke him gladly on hand and as he wes instruckit, he commandit the Erle to observe ane diet: sone efter, he gaif him soft seropis: and quhan he was admittit to mair familiarite, he gaif him ane vennomous potioun howbeit the vennome was nocht haiste deid, bot evar to consume ane man with long process." The monk then retired to England, ostensibly to procure another "singular medicine," and the earl found "certane dolouris ilk day mair increasing in his wame" (*tormina quædam ventris*—in the Latin original—lib. xv. pp. 310–1), and though in extreme weakness, had himself dressed in full state to receive an English herald, and convinced him that he could still lead an army against England. He died, however, at Musselburgh on his return home; and, according to Boece, King Edward was so enraged at his monkish emissary's supposed failure, that "he gart birn (burn) him, according weill to his demeritis," before he heard of the earl's death, which was ascribed to his "treatment."

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[1] I use the traditional form, communicated to me by the Dowager Lady Kinloch of Kinloch.

[2] "History and Chronicles of Scotland, written in Latin by Hector Boece and translated by John Bellenden, Archdean of Moray," Edinburgh, 1821, vol. ii. pp. 412–413.

There is a considerable lapse of time before we again hear of poison in the Scottish Records, but it was occasionally suspected; and Boece specially mentions one instance when, after Robert Duke of Albany had induced his granddaughter Euphemia, Countess of Ross, to resign her earldom in favour of his sons, no sooner had the deed been done when "with great slicht Effem deceissit, be industry, as was belevit, of Duke Robert."

In 1450, King James II.—we know not why, unless it was the foreign intercourse following on his marriage the year before to Marie of Gueldres—woke up to the necessity of legislating against the importation of poison, and an Act of Parliament was passed at Perth on May 4, which runs:[1]—

"Item, gif ony strangers ane or ma man or woman of any vther realme cum into this realme of Scotland and inbring be ony moyen or way poysoun throu the quhilk any Christin man or woman may tak bodily harme and that may be kende or that be convict thareof thai sal vnderly the samyn paynis as is before writtyn of thame of this realme and na conduct nor remissione helpande thame in that case."

We notice little more of poison, however, until the reign of his son, when an attempt to use it was evidently made. James III was unfortunate in his fraternal relations, being completely under the influence of his minion Cochrane, that mysterious "mason," whose sudden rise led to his sudden murder in 1482 by Archibald "Bell the Cat," Earl of Angus. Cochrane, according to Pitscottie, hated the king's brothers, and brought witches to the king to prophesy their nefarious designs. Now witchcraft and poisoning, as we shall see, were almost always connected in Scotland. The Duke of Albany, the king's younger brother, fled and took up arms; and when later, on the fall of the favourite, a regular treaty of peace or "Indenture" was entered into between them, on March 25, 1482,[1] it contained the following significant clause: "Because thar is a sclandir and murmour rising in the cuntre that the said noble and michty prince the Duc of Albany wes posonit in oure Souerane lordis presens and palace, the said Alexander Duc of Albany sal in plane parliament be his letter and sele declare and mak manifest the verite that he was neuir posonit nor his deid in na way imaginit be owre said Souerane lord nor be nane uther persone or personis be Counsaile, command wit or consent of his hienez."

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[1] Thomson's "Acts," ii. 39.

In the reign of King James IV. poison is again said by tradition to have been used at Court. The king took in 1496, as his mistress, a fair cousin, Margaret Drummond, daughter of John, first Lord Drummond, and it is said that he refused to marry any one else while she lived. She was "kept with great state in a castle," and about 1497 bore the king a daughter, Margaret Stewart, afterwards Lady Gordon; but it was believed that she fell a victim to the jealousy of the nobles, who desired the king's marriage, and had her poisoned when breakfasting at Drummond Castle, with her two sisters, Lady Fleming and Sibilla. They all three died "suddenly," in great pain, near the month of April 1502,[2] and were buried in a vault in the Choir of Dunblane Cathedral, under three fair blue marble stones,[3] which remained intact until 1817.

The king, as the nobles are said to have foreseen, married next year the Lady Margaret Tudor, sister of Henry VIII. of England, a popular match, which was eventually the means of uniting the two kingdoms under one crown; but he had Masses for Margaret Drummond's soul sung during all the years of his life.

We come to surer fact in 1537, when there was an alleged conspiracy to kill King James V., which has become famous in Scottish story.

Jean Douglas, Lady Glammis, was the granddaughter of "Bell the Cat," Earl of Angus, and sister of the attainted Archibald, Earl of Angus,[4] who, with all the Douglas family, were put under the ban of the king, who had at last revolted from the thraldom in which they had kept him when a youth. Lady Glammis continued to assist her brothers and family any way she could, and so fell under the king's displeasure as well. She was accused of "inter-communying with our Souerane Lordis' rebellis or for ony other crymes," and escheated in 1531, and, along with her son and second husband, Archibald Campbell of Keipnech, was arrested in Forfar, and eventually brought to Edinburgh, on the serious charge of having been art and part of taking the life of her first husband, Lord Glammis (four years before), *per intoxicationem*, or by enchanted potions; and later, on trial, she was, on July 17, "*conuicta de arte et parte proditorie conspirationis et imaginationis interfectionis, siue distruetionis, nobilissime persone serenissimi domini nostri Regis per pessimum venenum lie poysone*," as well as for inter-communing with her brothers, the Earl of Angus and George Douglas; and by the mouth of William Carwod, "sectator" of the Court, her doom was "That scho sall be had to Castell hill of Edinburghe and thair BRYNT in ane fyre to the deid, as ane Traytour." This savage sentence made a great impression at the time. Sir Thomas Clifford wrote to King Henry VIII.[1] that the verdict of guilty was given "without any substanciall ground or proyf of mattir," and it was generally attributed to the king's hatred of the Douglas family. She suffered, nevertheless, and her husband was killed in attempting to escape from the castle by means of too short a rope. Her son, condemned for the same conspiracy to be hanged and drawn, was, however, spared on account of his youth, and lay many years in prison during the king's lifetime. Historians have shown much sympathy for Lady Glammis, and have implicated her lover, William Lyon, as her betrayer, and a barber and a priest as accomplices. One historian puts into her lips, indeed, the speech: "I am here accus'd for purposing to kill the king; and, to make my pretended crime more frightful, it is given out that the way was to be by poison. With what strange impudence can any accuse me of such wickedness, who never saw any poison, nor know I anything about the preparation of it. . . . Or, though I had it, how could I use it, since I never come near the king's person, his table, nor palace." It is not impossible, however, that there was a real plot against the king's life at this time. Lady Glammis' brother-in-law, John, Master of Forbes, was implicated also, and "thairfore wes heided and quarterit at Edinburgh," his familiar, John Strathauchin, younger of Lethinturk, condemned to death, though pardoned and banished, and the lady herself, whose "noble blood and singular beautie" impressed the people, had, as we have seen, been reputed to have made away with her first husband by potions also.

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[1] *Ibid.*, Supp. 32, a.

[2] "Exch. Rolls," xii., xlix.

[3] Malcolm's "House of Drummond," pp. 72–73.

[4] By her mother, Elizabeth Drummond, she was niece of Margaret Drummond who died in 1502, as we have seen.

The next notices of poison[2] are of a fragmentary nature: in

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[1] Brit. Mus. MS., cit. by Pitcairn in his account of the trial, vol. i. pt. 1, p. 189.

[2] Bishop Robert Reid of Orkney, one of the commissioners sent from Scotland to

1554, on the 12th March, Henry Congleton,[1] Patrick, his brother, and William Lille were accused of the slaughter, in June 1553, of Oliver Congleton, eldest son and heir of Robert Congleton of that ilk, "in the Place of Kynneir," by drugs—*per intoxicationem.* In 1562, on the 16th March,[2] Mr. Allan Colquhoun was convicted of poisoning his step-father's servant, and of attempting to poison his mother and step-father, and was hanged and burned.

In 1578–79, another of his clan, Helen Colquhoun, was accused of the "treasonable[3] administering of poysoun" to her spouse, William Cunninghame of Aiket; but the fragmentary records give us little information about these trials, and we next come to the important case of the Treasurer, John Stewart, Earl of Atholl. This is the most notorious "suspect" case in our annals, and it is one of the few Scottish poisonings which was taken notice of furth of Scotland, the Earl of Atholl's sudden death being everywhere attributed to the Regent, James Douglas, Earl of Morton, or by some creature instigated by him.

Atholl and the Regent were rivals. Atholl, the king's near kinsman, was a Catholic; Morton, a licentious man, but a fervent Protestant. In April 1578, during the minority of King James VI., Atholl was made Chancellor at a time when Morton's star was clouded. They held aloof, though formally "reconciled," until March 1578–79, when Atholl appeared at the Council. Morton gave a great "reconciliation" feast at Stirling on 20th April, and following on it Atholl, the chief guest, died suddenly on the 25th April, "to the great displeasure of all the gude subjects of Scotland." His loss was much felt, and King James wrote to the dead man's son that his body, as "our his nearest kinsman," should be conveyed to Edinburgh to the Church of St. Giles, and "thair placed ewest our dearest Uncle and Regent (Moray) of good memorie."

No one for a moment dreamed that he had died a natural death, although a year before he had obtained a licence to leave the realm for the purpose of preserving his health. Spottiswoode writes,[4] "as report always speaketh the worst of great men's deaths, so the rumour at this time went, that Morton had made him away by poison"; and adds that, although a post-mortem examination (of a kind) was held, yet the earl and countess "took open protestation that the trial of the Council should not prejudge the criminal pursuit of which they intended before the justice." A fatal result followed. "The scandal was fostered a long time by a sort of rhyming libels, which were afterwards tried to be composed by one Turnbull, a schoolmaster at Edinburgh, and another called William Scott, who were executed for the same at Stirling in the end of the summer."

France to witness the marriage of Queen Mary to the Dauphin, died at Dieppe on his homeward journey, on 14th September 1558, it was said by poison.

[1] Pitcairn's "Criminal Trials," i. 368–69. [2] *Ibid.*, i. 420. [3] *Ibid.*, i. 80.

[4] "History of the Church of Scotland," ii. 263.

That the belief was widespread is undoubted. We see in the "Spanish State Papers" that Bernardino de Mendoza writes, 14th May 1579, to the King of Spain: "The Queen [Mary Queen of Scots] has received news from Scotland of the death of the Earl of Atholl, which happened so suddenly that they think it must be from poison," and describes (as we shall recount later) the subsequent inquests. He writes again (6th July): "The son of the Earl of Atholl professes to be much offended at the death of his father, but has not armed to avenge him, nor have any members of his party." Queen Mary had no doubt of the murder, and wrote to the widowed countess: "My good Anti," referring to the "dealings off our fals traitours that (are) not content off yowr good Lord's death by poisoni(n)g him so vickedli."

But whatever Mendoza thought, the dead man's son did make some show of indignation. He delayed the funeral (until 4th July), and he and his mother, Margaret, Countess of Atholl, his kinsmen and friends, petitioned the king for justice, "In trying of the unhonest, tressonable and maist vyle murthour of my lait father." It was a general charge, however, accusing no particular person of the murder (the Earl of Mar, son of the Regent, and "the auld Countess of Mar" were also hinted at[1]), and "six earls and sundry lords and barons"[2] were ready to uphold him.

Upon this the Council called the surgeons together, and an inquest was held, in the presence of the King's Majesty and the Lords of the Privy Council, in Stirling Castle on 16th June 1579. The proceedings are not uninstructive,[3] and they show the absolute ignorance of the old-time physicians in regard to the evidences of poison.

James Owhegarty, "Irelandman borne, leiche that ministratis medicine in the mouth and curis outward be herbis," deponed to death being caused by "rank venom" received by the mouth.

Alexander Prestoun, "Doctour in Medicine," declared that the Earl died of poison. So did George Boswell, "Mediciner and Chirurgiane in Perth." Mr. Gilbert Moncrief was doubtful. His evidence was cryptic: he found the humour in the stomach to be venomous, but could not say whether it was exterior or interior grown within the body. David Rattray, "Chirurgiane in Coupare," deponed to death being caused by "ane extraordinare poyson, and that ane spune put in the humour changeit the cullour in the cullour of brass." R. Craig, "Burgess of Edinburgh, Chirurgiane," temporised, saying the earl, "to all appearance," died of poyson. John Erskine of Dun, a non-medical witness, thought that a red matter which Dr. Prestoun showed him was "a cauld poyson." Mr. John Duncanson, chaplain to the king, alleged that the earl had got "a wrang causles," as well as (how, does not appear) black lumps on his side and shoulders. Mr. Row, minister, of Perth, cannot say "of his conscience"; while the last witness, the minister of Aberuthven, Mr. John Hammill, stated that he saw "strange and unnatural tokens in the stomach, black and red, as it were the dregs of bread and wine mixed," and, what was more important, had heard the dead earl say "that he had got offence, and God forgive them that had done it."[1] Mendoza adds a quaint description of this inquest: "They had opened the body in the presence of five doctors, three of whom said he had been poisoned and two that he had not. One of the latter, to assure them that he was right, by proof, took some of the contents of the stomach on his finger and put it into his mouth. The effect was that in a few hours he was thought to be dying. It is not known whether the order to poison him came from Morton or some private person." No wonder, after this exhibition of Scottish medical science at the time, that, as Spottiswoode says, the end was that "the physicians did upon their oaths declare that his death was not caused by any extraordinary mean"; and that (to exculpate her son) on 16th June 1579, the day of the inquest, Margaret, Countess of Atholl, protested "solempnitlie" that whatever the Council may determine "tuiching the caus of the death" should not be prejudicial to her son, "for that scho did wes bot for hir self and hir awin deutie not having any commissioun of hir son nor nane of his friends."[2]

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[1] "Historie of King James the Sext," p. 174.

[2] "Hist. MSS. Com. Rep.," "Marquis of Salisbury's MSS.," p. 256.

[3] "Chronicles of the Families of Athol and Tullibardine," i. p. 33.

Yet in spite of all this, as we have seen, the public was not satisfied, and the chroniclers still suspected. An Act of Parliament was passed on 11th November 1579,[3] providing that no one was to calumniate the Earl of Morton and the Earl and Countess of Mar of the "allegit poysoning," unless by direct accusation. Nevertheless the Regent Morton thought that he was obliged to make a formal deathbed declaration in public that neither had a certain "Mr. Johne Provand brought home anie Poysoun," nor had he ever instigated the murder of the Earl of Atholl. He declared, before he himself died on the scaffold on 2nd June 1581, "I would not for the Earldom of Atholl have either ministered poison unto him or caused it to be ministered unto him; yea, if I had been a hundred and he himself alone, I would not have stirred a hair of his head";[4] and with the meagre evidence before us, who would now ever dream of giving any opinion whatever one way or the other?

This great case was in its turn followed by some of lesser magnitude. In 1579–80,[5] Andrew Glencorse in Penistoune was convicted of having poisoned his wife from love of her mother, and for this doubly heinous crime he was "brint"; and that poisoning was in the air is shown by another statement that in 1580 Alexander Stewart of Schuttinglees[1] met his death on 1st November by being "schot with ane poysonit bullet"—the only charge of the kind in our annals—and of this murder Laurence, Lord Oliphant, and Arthur Forbes, younger of Reres, had the good fortune to be acquitted.

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[1] This appears also in the Countess of Atholl's "Bill," "Thomson's Acts," iii. 175.

[2] "Reg. of the Privy Council," iii. 184–85.

[3] "Thomson's Acts," iii. p. 176.

[4] "Calderwood," iii. 563.

[5] Pitcairn, "Criminal Trials," i. pt. 2, p. 84.

On 22nd July 1590, there was a notable trial for witchcraft, in which poison played a conspicuous part.[2] Katherine Ross, Lady Fowlis, had a brother George Ross, younger, of Balnagowan. This brother, though married to Marjory Campbell, desired to marry the young Lady Fowlis, the wife of his sister's stepson, and Katherine, Lady Fowlis, agreed to forward this by removing the unnecessary living obstacles who were in the way, as well as her stepson, Mr. Hector Munro. They conspired, therefore, with witches, known as Christane Ross Malcolmesone and Marjorie Neyne M'Allester *alias* Laskie (or Lockie) Lonkart, "for the destruction of the saidis young laird and lady," which they attempted first by the old device of making two pictures and shooting at them with elf-arrow heads. For this Christane Ross was burnt at the stake at the end of 1577. Not expecting the failure of this plot, Lady Fowlis and her familiars had it stated in November 1577, "of set purpois for distructioune" of the young Laird of Fowlis, the lady and a batch of neighbours in her barn at Drumnyne prepared "a stoup full of poysonit new aill," for her fell purposes. This was spilled, except a small quantity, which "the said Katherine causit Donald M'Kay your awin boy to tak," who, on tasting it, "incontinent thairefter tuik seiknes, and lay continewallie thaireftir poysonit with the liquour." Lokie Loncart was then commanded to "mak ane pig-full of ranker poysoune," which she did. This "pyg" of poysoun was sent with Lady Fowlis' own "nourrice," or nurse, to Angus Leiths' house, where the young Laird of Fowlis was living; but this attempt was hardly successful either, for "thy said nourrice bringand the said pyg fra their fell the way, under silence of nyght and brak the pyg, and sche tastaned of the samin, immediatlie thaireftir departit be the said poysoun." The remainder falling on the grass, burnt it so that neither ox, cow, nor sheep would eat it. The poison was apparently "rattoun poysoune" got by Lady Fowlis, who gave eight shillings in money to William M'Gillenoriedam to go to Elgin, who brought it back in "ane pece ledder," and gave it to Lady Fowlis, in June 1577. She also sent him to consult with the "Egyptians" concerning poisons, to buy poison from Thomas Ross, merchant in Aberdeen, then in Elgin, and also at Tain, and he got the information for her that the poison could be administered anyway, "in eggis browis or keill," and that he sent some to the young Laird of Balnagowan, for his use, in "ane stoip of guid aill with breid and cheis," for all of which traffickings he was convicted and burned, "as the haill countrie knawis." The poison was conveyed to Ardmoir and delivered to the cook, who mixed it with a "kiddis near" of a deer just killed, and young Lady Balnagowan partaking of it, "contractit deadlie seiknes, quairin scho remanis ye incureable."

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[1] Pitcairn, "Criminal Trials," i. 90.

[2] *Ibid.*, i. pt. 2, pp. 191 *et seq.*

In spite of all these dealings with witches, sorcerers, and poisoners, this extraordinary trial ended in Lady Fowlis being acquitted, though several of her accomplices had already been put to death; and her stepson, Mr. Hector Munro, whom she was alleged to have conspired against, was, on July 22, 1590, brought to trial, in his turn, for "sorcery incantation and witchcraft," directed against his younger brother, George, Lady Fowlis' own son. With this intention he had consulted Marioune M'Ingaruch, one of the most "notorious and rank wichis in all this realme," who, after many incantations, gave some water from a stone, "the quhilk was the deith of the said George." Oddly enough, Mr. Hector was acquitted also.

In 1591[1] there was a great witch trial in Scotland, in which poison again figures in a notable way. The accused was no witch of humble origin, but the daughter of a Senator of the College of Justice, Eufame M'Calzean, heiress of Cliftonhall. She was well born and rich, and evidently believed in her incantations. She was brought to the bar charged with witchcraft of every kind, and one of the incidental accusations was that she was art and part in poisoning Patrick Moscrop, her husband, "upon deidlie malice contractid agains him, the first yeir of your mariage." She was reputed to have shown this openly, as she gave him poison, "and cuist the rest thairof in the closett, quhairby his face, nek, handis, and haill body, brak out in reid spottis: Quhilk poysoun wes espellit be his youth." She tried again, however, undismayed by his unwelcome vigour, with the result that her husband "wes compellit for saulftie of his lyffe, to expose himselff to the seais and to pas to France in youre default," and his wife, saying "the ffeind ga with him," continued to attempt his removal by the less dangerous but much more treasonable practice of witchcraft. She evidently dealt in poisons, as she, with the witch Catherine Carruthers, "Erisch Jonett," as helper, was accused of laying in the way of an enemy, Jenet Cokburne, "sic enchantit mwildis (moulds) and powder that in a short time thairefter thair came ane swarff (faintness) owre hir hairt and sic ane slassing (palpitation) in hir breist, as itt had bene sum quick thing, peching and panting, heaving up hir body; quhairwith sche is diseasit half ane houre ewerie tyme sche takis itt, oft in the nigcht and oft in the day; continewing sumtymes half ane day; haifing mair strength nor hir accustummit maner in time of hir health." More important for our purpose, however, than "inchantit mwildis" is another charge against the unfortunate accused. "Item. Indytit for the consulting with Jonett Cwninghame in the Cannongait als callit *Lady Bothwell*,[1] ane auld indytit Wich of the fynest champ 18 yeiris or thairby, for to haif poysonit Joseph Dowglas of Punfrastoune, and that be ane potioune of composit watter, quhilk ye send Johnne Tweddal youre servand for to be brocht up to Barbara Toureis hous in ane chopene stoup." This was caused by jealousy. The accused was in love with the Laird of Pumpherstone, "under culloure and cloik" of marriage to her daughter; and so infatuated was she that she gave him many jewels, including "ane craig chainzie, twa belt cheinzeis, ane ring," and "ane emirent," which she afterwards attempted to recover by necromancy. She tried to break off his marriage with Marie Sandilands, "ane madin," first by telling her that he was ill with a loathsome disease, and then by directing her own nourrice, or nurse—a useful go-between—with some of her "charmes and inchantmentis to offend the persoun of the said Marie quhairby the said mariage mycht haif bene stayit." Her trafficking with the wise wife of Keith, Agnes Sampson, for more "inchantit mwildis," to ease her own birth-pangs, may come under the head of either witchcraft or poisoning, but another charge, that of betwitching the eldest son and daughter of the Laird of Pumpherstone "to the deid," probably partook of the latter. One thing is striking in the whole trial, namely, that witchcraft, and either killing or curing by it, was a much more serious charge than that of the administration of poison, and that if Eufame Macalzean had not been accused of being one of the celebrated Witch Convention which met at North Berwick "for the tressonabill staying of the Queinis hame-cuming be storme and wind," we should have most likely heard nothing of her dabbling in poisons so many years previously. As it was, on June 12, 1591, she was, after due deliberation, found guilty of witchcraft, and of the poisoning of the Laird of Pumpherstone, and on June 15 was condemned, by the most savage sentence in the Scottish records, to be bound to a stake and burned to ashes—not strangled beforehand, as was usual with witches, but "quick," or living—to the death, at the Castlehill of Edinburgh.

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[1] Pitcairn, "Criminal Trials," i. pt. 2, p. 247 *et seq.*

Shortly after the death of Robert Stewart, Earl of Orkney, the bastard brother of Queen Mary, there was a quarrel between his elder son and successor, Patrick, and his younger brothers, John, James, and William Stewart, which led to frequent accusations of poisoning against the latter. When John, Master of Orkney, was brought to trial in 1596,[2] he was, with his brothers, accused of having "conspyrit and dewysit how to murthour the said Patrick Erl of Orknay his brother be poysoning or utherwayes be craft and quyet dealing," in November 1593, at Mr. William Mudie's house in Walls. The Earl of Orkney captured his brother's servant, Thomas Palplay, hired, it was supposed, to do the deed, who "being accusit thairof confest the samyn and was execute to the deid"; but as his confession was given after the incredible torture of having been kept eleven days and nights in the "cashielawis," put in the "buitis" twice a day, "skargeit with towis," and as he withdrew his confession before his execution, we gain little real evidence from his examination. It is only necessary to say that on this charge—on the charge of plotting to murder the Earl "att ane Bankyuet in David Moncriefis in Kirkwall in Orknay"—and on the charge of having consulted for the same purpose with a witch, Alison Balfour,—who was also frightfully tortured, but withdrew her extorted confession before she was burned,—John, Master of Orkney, was acquitted, however guilty he may have been; and while his brother was executed some years later, in 1614, he himself retained the royal favour, and died as Earl of Carrick.

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[1] Francis, Earl of Bothwell, was a known trafficker with witches.

[2] Pitcairn, "Criminal Trials," i. pt. ii. 373 *et seq.*

That poisoning was beginning to be looked upon with more horror is shown by the trial, on November 5 to 7, 1601,[1] of Thomas Bellie, burgess of Brechin, and James Bellie, his son, on the extraordinary charge of "contravening of our Soveraine Lordis Actis of Parliament for bying, haifing and keeping of Poysoune," and of having mixed the poison with dough and scattered it in the yard of his neighbour, Jonet Clerk, "for the destructioune of fowlis." Though the victims were only two hens, which swallowed the poison and died, the first of the accused was nevertheless for the "said cryme" banished *for life*, which perhaps shows that a graver crime had been intended.

In 1607 a trial with a most extraordinary result took place.[2] Bartie Paterson, tasker in Newbottill, was "Delaitit of the cryme of sorcerie and witchcraft, in abuseing of the peopill with charmes and dyuerse soirtes of inchantmentis, and ministering under forme of medecine, of poysonable drinkis: And of airt and pairt of the murthour of Johnne Myller in Ffurdmyine, about Martinmas last, and of umqle Elizabeth Robiesonne be the saidis poysonable drinkis, viz.: For cureing of James Broun in Turnydikis of ane unknawin disease, be ministrating to him of drinkis, rubbing him with sawis (salves) maid of dyuerse greene herbis, and causing him pas hame to his awin house, and at his bed syde to sitt doun on his kneis, thre severall nychtis, and everie nycht, thryse nyne tymes, to ask his helth at all leiving wichtis above and under the earth in the name of Jesus. And thaireftir ordanit the said James to tak nyne pickillis of quheit, nyne pickillis of salt and nyne pieces of rowan trie, and to were thame upone him for his helth, committeing thairby manifest sorcerie and witchcraft." He had also been unwise enough to cure people from water from the Dow Loche "besyde Drumlanrig," besides "caryeing of the said Loche watter to sindrie of the countrie, that war viseeit with seiknes, or quhais beistis war seik or fairspoken," besides having used verbal charms. For all of which crimes, which he confessed, he was sentenced "to be tane to the Castell-hill of Edinburghe and thair to be wirreit at ane staik quhill he be deid; and thaireftir his body to be brunt in asches." In this case it will be seen that the unfortunate man suffered not for his success in killing by poison, but for his success as a healer by witchcraft.

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[1] Pitcairn, "Criminal Trials," ii. 336.
[2] *Ibid.*, ii. 535.

Scot of Scottistarvet[1] tells of the death of a Scottish noble in England by poison, which is worthy of notice here on account of the manner of the post-mortem. He says that George Home, Earl of Dunbar, in 1611 was poisoned by "tablets of sugar given him for expelling the cold by Secretary Cecil." He continues, that Martin Souqir, a doctor, tried the poison "by laying his finger on his heart and touching it with his tongue"—in the same way which we saw was used at the inquest on the Earl of Atholl —with the result that he "died within a few days thereafter." This was told "by relation of his Servant of his Chamber, Sir James Bailie, who saw him get the tablets from the said Secretary, and who, having eaten a small parcel of them himself, struck all out in blisters, but by strength of body he escaped death."

The last trial for poison which we will deal with is in 1613. It is the latest on our books before 1625, the year of the accession of King Charles I., whose turbulent reign altogether changed the position of the Scottish nation, thus making this date a convenient halting-place for this essay. It was the trial of four well-born persons for the crimes of witchcraft, poison, and treasonable murder. It is again noticeable that in the order of the charges that of consulting with "usearis of Poysone or Poysoneable herbis, quhairthrow ony Cristiane man, woman, or bairne may take harme," is again postponed to the more important one of "consultation with witches."

Robert Erskine, son of John Erskine, appearant of Dun, "blinded with the godles and insatiable desyre of the landis and leving of Dun, and knowing perfytlie that he could nevir attene to be full Laird thairof so long as John and [Alexander] Erskynes [his elder brother's sons] was on Lyfe," therefore, "in his devillisch dispositioun," with the advice and consent of his three sisters, Isobel, Hellen, and Annas, met in the place of Logy, about midsummer 1610, and resolved upon their destruction by witchcraft, "be sum sinisterous meanis."[2] Jonet Irwing, "ane notorious witche and abuser of the people," was found, and the sinister means she suggested was "ane grit quantitie of herbis, quhilkis war brocht with thame (with injunction how to vse the saidis herbis) hame to Logy." These herbs the sisters took and steeped in ale for

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[1] "Staggering State of Scots Statesmen," p. 34.

[2] Pitcairn, "Criminal Trials," iii. 260–1, 266–9.

"ane lang space." Robert then solemnly asked his sisters whether the poison should be cast away or used, and they, with Lady MacBeth-like vigour, decreed that it should not be cast away, and so wasted. The sisters, a horse boy, and the elder of the young nephew-victims, rode to Montrose, where the other young nephew resided, and there the poison was administered to the two boys. "Quhilk drink eftir thair ressaving thairof, wrocht so violentlie upon thame, that immediatlie thairafter they tuik sic ane extraordiner preise (attack) of vomeiting, that na persone expected for thair lyfe. . . . The said Johnne Erskine, the eldest of the two, contracted sik a deidlie diseas and seiknes, that his skyn turning all blak, and his haill nobill partis inwardlie consumeing, he daylie and contineuallie thairefter dwynet in grit dollour and pane to the tyme of his death." He expired uttering words—"thir or the lyk"—"Wo is me, that I evir had richt of successioun to any landis or leving! for gif I had bene sum pure coitteris sone, I had not bene sa demanet, nor sic wikket practizes had been plottit againis me for my Landis." The other boy at the date of the trial (30th November apparently), 1613, was also in sad straits, as he remained "as zit in intolerable payne and seiknes universall thro his haill body . . . of quhais lyfe thair is na hoip." This, of all the cases I have cited, seems an indisputable case of poisoning, as Robert Erskine confessed his crime, and was duly beheaded on December 1. The sisters confessed also, and were executed upon June 24, 1614; except the youngest, who, as "mair penitent thogh les giltie," was banished out of the kingdom on March 22, 1615.

CLINICAL RECORDS.

CHRONIC CYANOSIS, WITH POLYCYTHÆMIA AND ENLARGED SPLEEN.

By C. Begg, M.B., C.M.Ed., and H. H. Bullmore, M.B., M.R.C.P.Ed.

We are led to report this case, not alone because, in its symptomatology, it accords with the few cases already reported under this head, but also because, as far as we know, no treatment has been published in the cases hitherto recorded.

Before Dr. Begg was satisfied as to the condition, and although there was no evidence of malaria, vigorous treatment was adopted, on the assumption that it might be of malarial origin. Thus, following the methods adopted in the East, inunctions of the biniodide of mercury ointment were applied over the spleen, and the part exposed to artificial heat; while quinine was given in increasing doses up to 45 grs. a day. The result has been most encouraging.

Case 1.—The patient is a married woman, æt. 47, occupying a comfortable sphere in life, and has resided in England all her life, with the exception of occasional visits to the Continent and Egypt.

Her father, brothers, and sisters, seven in all, have died of phthisis, while all her cousins on the paternal side have succumbed to tuberculous disease in one form or another. She comes of a healthy stock on the maternal side. From her mother she learnt that she suffered from "liver attacks" as an infant, and says that these attacks have persisted throughout life. She likens the attack to sea-sickness—giddiness, dimness of vision, nausea, and vomiting being prominent symptoms. Until 30 years of age she was seldom free from an attack for more than six weeks at a time. Since then the attacks have lessened in frequency, to at the most three a year, as the result of treatment by a London specialist. As Osler calls attention to the fact that the symptoms here presented may be simulated by an over-indulgence in the coal-tar products, it may be noted, if only of passing interest, that at this time the patient took creasote, in pill form, regularly for three years. Patient remembers that the specialist told her that her liver was enlarged at this period. She has suffered from constipation all her life, the bowels being regularly moved two or three times a week by means of salines. Another lifelong complaint has been frequent attacks of epistaxis, which occurred formerly generally once or twice a month, and for the past few years two or three times a year. The epistaxis has never borne any time relation to the menses, but does seem to have borne some relation to the "liver attacks," as patient says they always brought relief.

For the past three years patient has noticed a thick sediment in her afternoon urine, although the urine passed during the other hours of day and night remains clear upon standing. During this period she has been worried by an increasing dryness of the skin, and by an irritating eruption, which occurs synchronously either on the outer aspect of both forearms, over the upper one-third of the legs, or the anterior aspect of the thighs. She is seldom free from it in one or other situation. She has noticed that the veins of her legs have gradually increased in size during the past two years. In April 1904 she suffered from an acute neuritis of the right shoulder. In June of the same year her attention was directed to her left side by a dragging feeling, especially noticeable on stretching. She could then feel a small lump, described as almost the size of a hen's egg, projecting below the costal margin. In September the patient was sent to Bath for a course of treatment for the persisting neuritis of the right shoulder. She complained that for some months she had suffered from a languid feeling, and that she tired very readily upon exertion, and called attention to a large swelling in the left side of the abdomen, which caused her much discomfort. She also mentioned that she had lost about a stone in weight during the preceding nine months. Patient is a tall, thin woman, her nose, cheeks, and chin being of a livid red colour; her hands are slightly tinged with the same tint. There is no clubbing of the fingers. She says that her fingers do not become white, nor does she now suffer from cold hands or feet more than other people, or more than hitherto; and rarely from chilblains. Previously to June 1904 she had been pale, and has only gained her high colour since that time. The skin of the rest of the body is pale in colour; dry and harsh, and fine bran-like scales can be brushed off from any part. A fine urticarial eruption is seen over the outer aspect of both calves.

The left side of the abdomen was noticeably fuller in appearance than the right. This was found to be due to a much enlarged spleen, which in the mammary line reached as far as two inches below the level of the umbilicus, while the inner border lay in the mid line.

The spleen was hard, painless on pressure, and immovable by manipulation; the surface smooth, and no notch could be felt. The glands were not enlarged. The liver was not enlarged. The right kidney is slightly movable, the left cannot be palpated.

The respiratory system was carefully examined, without finding anything but the normal. The heart borders could readily be mapped out by percussion, the superficial dulness was not diminished. The apex was found to lie beneath the fourth rib, 3½ in. from mid sternum, while the right border lay along the right margin of the sternum. The heart sounds are clear and healthy, there are present neither indrawing of interspaces nor abnormal pulsations.

There is no perceptible thickening of arterial walls, but the superficial veins throughout seem to be contracted, with the exception of the veins of the legs, which are markedly varicose.

The condition of the pulse is shown by the accompanying sphygmogram, under 4 oz. pressure; rate, 84 per min.:—

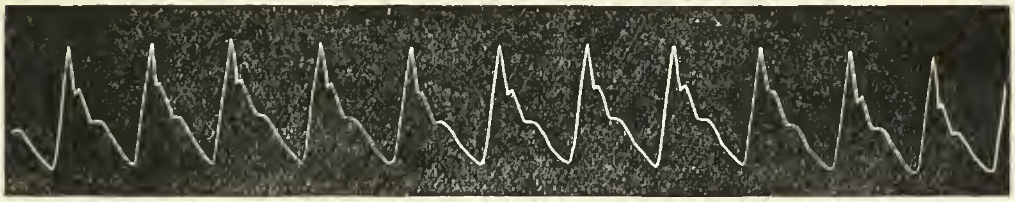

FIG. 1.—4 oz. pressure; rate, 84 per minute; left radial.

The urine passed during twenty-four hours was collected, keeping the morning, afternoon, and night urine separate. The total quantity amounted to 52 oz. All three samples were acid, the afternoon urine especially so. The specific gravity of night urine was 1004; morning urine, 1017; afternoon urine, 1022. Urea, 8 grs. per oz.; no trace of albumin nor any abnormal constituent found, except the enormous quantities of urates in the afternoon specimen. Microscopically examined, beyond bladder epithelium and urates nothing was seen.

The blood was first examined on 11th January; subsequently one examination a week has been made. The average of four examinations is as follows:—Hæmoglobin, 100 per cent.; red blood corpuscles, 6,850,000; white blood corpuscles, 11,300; polymorphonuclears, 77·3 per cent.; lymphocytes, 13·8 per cent.; large mononuclears and transitionals, 4 per cent.; eosinophiles, 1·5 per cent.; basophiles, 3·5 per cent.; and an average of five normoblasts seen per count, the counts averaging 1200 white cells.

Poikilocytosis and polychromatophilia, especially the latter, were well marked; in the first specimens examined megalocytes greatly preponderated over microcytes. No glycogenic reaction has been found.

The subsequent examinations have shown a progressive diminution of the pathological elements.

The specific gravity has remained about 1052 to 1054. Coagulation time, as tested upon a glass slide, was generally two minutes; and the alkalinity of the blood, as tested by Engel's alkalimeter, is slightly reduced.

Patient now volunteers that she has lost her languid feeling, can take exercise without feeling any unusual fatigue, and has "quite forgotten her spleen," as she feels no discomfort therefrom, even on extreme stretching. On examination, the spleen is found to have retracted upwards 2 in. in the mammary line, and the inner border is now 2 in. from the mid line.

Further, the whole organ can now be tilted or pushed up under the costal margin, evidencing a circumferential diminution. That this is the result of treatment seems the more probable, from the fact that when the inunctions were interrupted on one occasion, owing to skin tenderness, and while the patient was not taking quinine, the spleen enlarged $\frac{3}{4}$ in. in all directions. Again, when inunctions were discontinued, while quinine continued, the diminution of the organ progressed. The patient has gained 9 lbs. in weight during treatment.

REVIEWS OF BRITISH AND FOREIGN LITERATURE.

Wounds in War. By Surgeon-General W. F. STEVENSON, C.B., A.M.S. Second Edition. London: Longmans, Green & Co.

SINCE this work originally appeared in 1897, military surgeons have, in the Spanish-American and South African wars, had their first experience of the effects of modern projectiles as used in actual warfare. In these wars also antiseptic methods were for the first time systematically employed on a large scale on the field and in the military hospitals; and the Röntgen rays had not previously been available as an aid in diagnosis. The altered conditions as to the production, diagnosis, and treatment of gunshot wounds brought about by these different factors have rendered it necessary that the opinions held by military surgeons on various points should be revised. No one was more eminently qualified to reflect the amended views of army surgeons than Surgeon-General Stevenson, and it is a matter for congratulation that in preparing a second edition of his work, he has taken the opportunity of doing so. So thoroughly has the work of revision been done, that the volume before us may, for all practical purposes, be looked upon as a new treatise.

In his preface the author enters a plea for the recognition of Military Surgery as a special branch of surgery, and we are entirely with him in his contention that the conditions under which the patient sustains his wounds, the variations in the nature of the lesions produced, and the circumstances under which the treatment has to be carried out, render it necessary that the peculiarities of wounds in war should be specially and separately studied. In the light of what has been learned in the late wars, Surgeon-General Stevenson takes a very hopeful view of this branch of surgery. "The ideal in surgical procedures in war," he says, "has not yet been achieved, but it is in sight."

In the opening paragraphs of the first chapter the author seems to fall into an error, common alike to the makers and the wagers of war, in supposing that the conditions of the latest campaigns shall be the conditions of all wars in the future. He remarks, for example, that "the study of wounds in war may be said to resolve itself, almost exclusively, into one of gunshot wounds" . . . and "that but little opportunity arises for injuries from other kinds of weapons to occur in warfare." The medical records of the Russo-Japanese war, now in progress, are not yet before us, but if we may judge from the reports of the fighting as given by the war correspondents, the author's statement that "the frequency of bayonet and sword wounds, as well as those of all the side arms, are so insignificant, as compared with that of rifle projectiles, that they may almost be set aside," may require to be modified when the call comes for a new edition of his work.

In the difficult task of rendering a technical description of the designing and construction of firearms, and the mechanics of projectiles, at once instructive and interesting, the author has succeeded admirably. To this subject the first chapter is devoted, and by the aid of some excellent diagrams these intricate problems are made perfectly clear. At the present moment it is interesting to note the author's opinion of the Lee-Enfield rifle, which, he says, is, "from a musketry point of view, one of the most powerful weapons supplied to any army."

"The characteristics of the injuries produced by projectiles" is the subject of the second chapter, and the author points out that the experimental work with small-bore bullets on dead animals and cadavers gave results which were quite erroneous, and that the lesions produced on living men under the actual conditions of war are essentially different from those produced experimentally. The much-debated subject of the "explosive effects" of bullets is fully discussed, and, after considering the various theories put forward to explain these phenomena, the author concludes that "we must fall back upon the older explanation that 'explosive effects' are due to the energy of the bullet being communicated to the fragments of bone and to the particles of liquid and soft tissues broken up in the bullet track, and that these act as secondary missiles on the parts in their vicinity."

We cannot follow the author through his valuable chapters on gunshot wounds of the joints, bones, and blood vessels, and on injuries of the head, chest, and abdomen. Suffice it to say that in them the reader will find a most comprehensive and convincing exposition of the modern aspect of the subject, and conclusive evidence of the author's statement that "in no branch of surgery has antiseptic treatment brought forth more marvellous changes for the better than in the treatment of wounds in war." A short chapter is devoted to the X-rays, and Dr J. Mackenzie Davidson contributes a section on the localisation of bullets and the use of stereoscopic skiagraphy.

Post-Mortem Pathology: A Manual of Post-Mortem Examinations and the Interpretation to be drawn therefrom. By HENRY W. CATTELL, A.M., M.D., Demonstrator of Morbid Anatomy in the University of Pennsylvania. Second Edition. Philadelphia and London: J. B. Lippincott Co.

THE first edition appeared in 1903, and it is the best testimony of its value which it could produce that a new edition is required so soon. The book is written for those who ought to make autopsies, but do not, and for those who must make them—*e.g.* medical students, hospital residents, coroners' pathologists, and others. There is no doubt that the author is right in saying that too few post-mortems are made outside hospitals, and that many of those that are made are not done by sufficiently skilled persons. All will agree with him when he says that the physician who improves his opportunities for pathological study on the cadaver will thereby improve his powers as a diagnostician and therapist. The present edition has had added to it a chapter on the pathology of the bones and joints, a summary of the literature on legal medicine, and the technic of post-mortem examinations, and twenty-seven new illustrations, including six in colours. One subject which has made considerable advance since the first edition appeared is that of the methods of bacteriological investigation, and it is satisfactory to find the author fully alive to these advances as well as to those of value in medico-legal matters. The whole work is well got up, and special praise must be accorded to the number and excellence of its illustrations. It can be recommended with confidence as a valuable help to all who have to perform post-mortem examinations, however skilled they may already be.

A Manual of General or Experimental Pathology. By WALTER S. LAZARUS-BARLOW, B.A., B.Sc., M.D., F.R.C.P. Second Edition. London: J. & A. Churchill.

THE first edition of this book appeared in 1898. During the interval the author has also published a "Text-book on Pathological Anatomy and Histology," and this has enabled him to make extensive changes in the present edition. Not only has he made great changes in the matter, but he has altered the entire form of this book, so that it may now constitute in large measure a complementary volume to his text-book. By general consent the pathology of œdema was held to be one of the best and most readable chapters in the first edition. So much other material had to come in that it has had to undergo a great condensation in this second edition. Room had to be found for a much fuller account of the subjects of infection and immunity. A good account has been given of the latter, particularly of Ehrlich's side chain theory. The subject of anti-bactericidal serums might, however, have been more fully discussed. A chapter has been introduced on pathogenetic animal micro-organisms. The pathology of the blood, with especial reference to the blood corpuscles and the anæmias, forms an excellent chapter. The mass of the blood, its coagulability, its alkalinity, its specialised elements, the anæmias, and the increases and diminutions in the leucocytes, form appropriate heads under which he describes this subject. Inflammation in general and its sequels are clearly described, and the chapters on the pathology of heat regulation, of nutrition, and of respiration, have all much to commend them. Altogether the book is a most readable one, and likely to serve the purpose for which it is intended.

Blood Immunity and Blood Relationship. By H. F. NUTTALL, M.A., M.D., Ph.D. Cambridge: The University Press.

THIS volume of some 440 pages gives an account of an elaborate series of investigations made by the author and by Messrs. G. S. Graham Smith, F. Sanger, and Strangeways, into the blood relationships amongst animals, ascertained by means of precipitating anti-sera upon 900 specimens of blood (Nuttall), and into the practical applications of the precipitin test for blood in legal medicine (Smith and Sanger). The results should be interesting not only to zoologists, physiologists, and those engaged in practical medico-legal work, but also to those interested in the complex problems of immunity. Part I. deals with anti-bodies in general other than the precipitins, while Part II., dealing with the latter, takes up necessarily the greater part of the book. The number of individual experiments and tests is very great—many thousands—and the mass of material collected is so great that it is difficult to formulate its value or to draw from it any detailed conclusions. The ascertained facts are there, however, and, combined with further work on the same lines, they may show relationships at present unseen, and enable future workers to draw wider and more important conclusions. The results show that there are many points of resemblance between the different anti-bodies. The precipitins and precipitable substances are intricately bound up with the globulins in the serum, and have not been separated therefrom. They combine quantitatively, but their various interactions under different temperatures, their resistance to desiccation, their destruction by peptic digestion, etc., are too complicated to be given in any detail. The seat of origin of the precipitins is unknown. They seem to fluctuate in amount during immunisation, and begin to disappear about one month after treatment has ceased. There is evidence of iso-precipitins, auto-precipitins, and anti-precipitins being found artificially in the bodies of treated animals. Bacterio-precipitins appear to be distinct from others. Hæmolysins and agglutinins possess scarcely any value medico-legally; but by the use of precipitins, on the other hand, there are but few conditions met with in forensic practice under which human could not be differentiated from other bloods, provided that the observer possesses a considerable acquaintance with the action of precipitating anti-sera on blood solutions; in short, possesses the knowledge necessary to enable him to avoid the various sources of error. Mr. Nuttall is to be congratulated on the production of this book. It should prove of much value to others, and should stimulate further investigation into the many problems connected with the subject.

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1. *A Manual of Obstetrics.* By A. F. A. King, A.M., M.D. Ninth Edition, Revised and Enlarged. London: Henry Kimpton.
2. *Midwifery for Midwives.* By W. Denison Wiggins, M.R.C.S., L.R.C.P., D.P.H. London: Baillière, Tindall, & Cox.
3. *A Complete Handbook of Midwifery for Midwives and Nurses.* By J. K. Watson, M.D. London: The Scientific Press, Limited.
4. *Obstetrics for Nurses.* By Joseph B. De Lee, M.D. Philadelphia, New York, and London: W. B. Saunders & Company.

These four books on obstetrics are small manuals designed for the student, the midwife, and the nurse. Two of them, namely, those by Dr. King and Dr. De Lee, were not addressed primarily to an audience in this country. Dr. King's manual is in its ninth edition, showing that it has met with considerable appreciation. It is simply and concisely written, and presents satisfactorily the elements of obstetrics.

Considerable attention is paid to the practical side of the subject, and the directions given are in the main clear and such as may be recommended safely to the student or practitioner. The paragraphs devoted to the treatment of mento-posterior presentations appear to have suffered in the course of revision, as methods suitable for adoption before rupture of the membranes and descent of the head into the pelvis, follow those adapted to cases where the head is low down. In one of the two operations described for Cæsarean section, an incision through the abdominal wall and uterus, of 4 to 5 in., is recommended. An incision of this length would give rise to considerable and unnecessary difficulty in delivering the child. Accidental hæmorrhage is rather scantily treated, and under the heading of transverse presentations no mention is made of neglected cases and their treatment. In spite of certain merits, this book does not present any such features as would make it appear likely that it will displace any of the text-books commonly used in this country.

Of the two books written for midwives, that by Mr. Wiggins is the more satisfactory. It gives a short, clear account of the management of normal labour, and the detection of any difficulties that may occur. It covers the ground required for the present examinations for midwives, and may be regarded as an adequate presentation of the subject. It is written on much the same lines as some of its predecessors, and does not present any features calling for special comment. Dr. Watson, in his handbook, has not limited his subject to the requirements of practice of the midwife, but takes the view that a wider knowledge of her work is an advantage. The consequence is, that his book tends to fall between two stools. Not enough stress is laid on elementary and essential facts, and the necessary information would be obtained only by the beginner with great difficulty from a book written in such detail. As a work to be consulted when a certain amount of knowledge has been acquired, it enters, to its disadvantage, into competition with the numerous text-books on obstetrics prepared for a wider audience.

Dr. De Lee's book is written for obstetric nurses rather than midwives. As a consequence, the space devoted to obstetrics is small, the author contenting himself with describing shortly the process of labour and the complications met with. Nursing is treated in detail, though somewhat diffusely, and the information given would be found useful, especially to those who have had no previous training in general nursing. Certain differences in the management of cases, such as the position of the patient during labour, necessarily render the work of less value in this country.

Manual of Midwifery for the use of Students and Practitioners. By W. E. Fothergill, M.A., B.Sc., M.D. Third Edition. Edinburgh: Wm. F. Clay. New York: The Macmillan Co.

We are glad to see that this manual has reached a third edition, as it is one of the best text-books on the subject that we possess. The features that distinguish it are too well known to render necessary any detailed account. It bears throughout a distinctive character of its own, and embodies in its pages the teaching of the Edinburgh School. Special reference may be made to the chapters on mechanism, as considered from the clinical point of view, and as the result of the study of frozen sections. We know no more thoughtful and scientific description than is contained in these pages. The chief alteration of importance in the new edition is the re-writing of the chapters on the development of the ovum, and we have as a result an admirable short description of the subject. The work is lucid and sound in all points of practice, avoiding the extreme methods of treatment that are so conspicuous a feature in many of the text-books introduced recently to this country from abroad—methods ill adapted to the requirements of the student and practitioner.

In considering eclampsia, the author considers that in the absence of pains and dilatation of the cervix, it is wiser to rely on general methods of treatment, and to refrain altogether from meddling with the undilated cervix. As a general statement we believe this to be sound, and are glad to see this protest against indiscriminate emptying of the uterus.

No better or safer work can be placed in the hands of all students or practitioners of medicine, and it is a matter of satisfaction that Dr. Fothergill's work has met with some of the measure of popularity that it deserves.

Orthmann's Hand-Book of Gynæcological Pathology for Practitioners and Students. Translated by C. Hubert Roberts, M.D. Lond., F.R.C.S. Eng., M.R.C.P., assisted by L. Trechmann, F.R.C.S., M.B., C.M. Edin. London: John Bale, Sons, & Danielsson, Ltd.

This book is devoted almost entirely to the microscopical pathology of the female genital organs. The author has limited himself to the conditions most commonly met with, the rarer diseases and pathological changes being either briefly dealt with or omitted altogether. This appears to us to be unfortunate, for sufficient information regarding the commoner conditions is to be obtained in the general text-books on pathology and gynæcology, while in a book devoted specially to a limited branch of pathology one expects rather to obtain information on difficult and disputed points not readily obtainable apart from scattered monographs and journals. Further, in such a work it seems unnecessary to give elementary details with regard to the preparation and staining of material. No one is likely to start a course of microscopical pathology by devoting himself to the diseases of women, and there are many reasons why such a proceeding would be unsatisfactory.

Taken as a guide to the systematic examination of all the ordinary and some of the rarer pathological conditions of the genital organs, the book is an excellent one, and will no doubt prove of use to those who wish to have in a compact form a reliable account of the microscopical appearances to be met with. There are seventy-three illustrations, the majority of which are good, a few, especially those relating to inflammatory changes, being on too small a scale, and too indefinite, to be of much use. We must congratulate Dr. Roberts on the excellence of the translation.

An Introduction to Dermatology. By NORMAN WALKER, M.D. Third Edition. Bristol: John Wright & Co.

WHEN a text-book has established its popularity so thoroughly as Dr. Walker's has done (the first edition was published less than five years ago), little criticism of its general scheme is demanded, and the reviewer's chief duty is to notice the alterations which successive issues show. We have compared this page by page with the first edition, and everywhere find evidence that the author has thoroughly revised and brought his book up to date. The therapeutic progress which the introduction of the various forms of radiant energy has brought about is visible in no branch of medicine more than dermatology, and accordingly, while the simpler remedies at the disposal of every practitioner are by no means neglected, the newer methods find an important place in many of the sections on treatment. In favus and mycosis fungoides, for example, we learn that the prognosis has been entirely altered by the employment of X-rays. The possibility of benefit in lupus by the use of uranium, as a cheap and convenient source of radiation, is also mentioned. Among other additions and alterations, we note the descriptions of parakeratosis variegata and blastomycosis (previously regarded as a rare papillomatous form of tuberculosis), and the transference of lupus erythematosus and scleroderma from the chapter on retrogressive changes to that on the granulomata. The section on alopecia has been almost entirely re-written, and in the light of his recent work Dr. Walker speaks more confidently than formerly of the parasitic nature of the disease. Of the numerous illustrations, while those in colour are of very unequal merit, the majority of the photographs are excellent. This new edition more than maintains the standard of its predecessors.

A Treatise on Bright's Disease and Diabetes. By JAMES TYSON, M.D. Second Edition. London: Rebman Ltd.

WE must confess to a feeling of disappointment on reading Dr. Tyson's book. It is true that it gives a concise account of the maladies with which it deals, and that from its critical references to the literature of the subject it will form a useful work of reference; yet it lacks the impress of the writer's personality and experience,—that indefinable something which gives even an unambitious book permanent and practical value. The opening chapters treat of the anatomy of the kidneys, albuminuria, and casts; then comes an historical sketch of Bright's disease, ending with an account of the classifications proposed by different authorities, that favoured being one into acute nephritis (the various pathological types being clinically undistinguishable), chronic nephritis (large white and secondary contracted kidney), primary contracted kidney, arterio-sclerosis, waxy disease, passive congestion, and suppurative nephritis. There is nothing specially new in the description of the clinical features of these conditions; under the recognition of the occurrence of contraction in chronic diffuse nephritis, mention is made of the methylene-blue test as likely to prove of value. Dr. Tyson is a strong advocate of jaborandi in all forms of Bright's disease where rapid depuration is sought; in his hands apparently no bad results have followed. The chapter on the dietetics of nephritis is very good. The fallacy that while red meat is harmful white meats may be used freely, is exposed. In many points the author follows Von Noorden, and allows a limited quantity of animal food, deprecates too liberal consumption of fluids, and advises the administration of carbonate of lime when an exclusively milk diet is ordered. In the chapter on diabetes, what is known as to the pathology of the disease is summarised, though too little justice is done to Opie's work, and the relationship of the islands of Langerhans to glycosuria is rather cursorily dealt with. Among the complications of diabetes, xanthoma is unmentioned. We are glad to see that Dr. Tyson still considers Trommer's test the most generally useful. The fact that reduction occurs in the cold, if sufficient time be allowed, is mentioned, a seldom described modification of the test which greatly enhances its diagnostic value. The book is well illustrated with plates in colour, and the sections on ocular changes have been entrusted to the capable hands of Dr. de Schweinitz.

Guide to the Examination of the Throat, Nose, and Ear for Senior Students and Junior Practitioners. By WILLIAM LAMB, M.D., Honorary Surgeon, Birmingham Ear and Throat Hospital. London: Baillière, Tindall, & Cox.

THE want of a small manual upon the examination of the ear, nose, and throat has long been felt, and the necessity for such has been increased of late years, since the study of the diseases of these organs has come to be regarded as a necessary part of the student's curriculum. Dr. Lamb has fully realised this, and we welcome the appearance of this volume. It does not pretend to be anything more than it is, and that is a guide to examination, but we regard it as all that the author has aimed at, and the book should prove a most useful one for senior students desiring an introduction to the study of diseases of the ear, nose, and throat. Dr. Lamb does not confine his remarks to merely a detailed account of the method of conducting an examination of these cavities, but he presents to the reader in a concise yet descriptive manner the appearances presented by the commoner diseases. We are glad that the author has abstained from the too frequent practice of illustrating such a book as if it were an instrument catalogue.

Malignant Disease of the Larynx (Carcinoma and Sarcoma). By PHILIP R. W. DE SANTI, F.R.C.S. (Eng.), Surgeon to the Throat, Nose, and Ear Departments, Westminster Hospital, London. London: Baillière, Tindall, & Cox.

IN this short monograph the author seeks to lay before the profession what may be looked upon as the views held in this country regarding the operative treatment of malignant disease of the larynx. He expresses the hope that his book may do something towards correcting the misunderstanding which undoubtedly exists on this point both on the Continent and in America. We cordially sympathise with him in his endeavour, and trust it may give our foreign confrères a truer conception of the value of thyrotomy in intrinsic laryngeal cancer, and of the success which has attended it in the hands of Butlin, Semon, and other British surgeons.

The first half of the volume deals with the clinical aspects of the disease; the remainder discusses operative treatment and its results. There are many points of practical interest and value which will well repay the reader.

Nose and Throat Work for the General Practitioner. By George L. Richards, M.D., Otologist and Laryngologist, Fall River Union Hospital, Mass., U.S.A. New York: International Journal of Surgery Company. 1903.

The importance of the nose and throat both in their relation to the diseases of the special senses and in connection with certain affections which may prove dangerous to life, makes a study of these regions almost imperative. The subject is one which some of the medical schools have introduced as an optional subject of study, but, without desiring to overestimate its importance, and with no wish to increase the work of the already sorely taxed student of medicine, we are inclined to advise its inclusion amongst the compulsory subjects. A good deal has been done in recent years to diffuse a knowledge of diseases of this branch of surgery and medicine in the profession, and a number of books have appeared, which have been written specially from the point of view of supplying the general practitioner with a working knowledge of the subject. The present volume is one of this kind, and very ably does it fulfil its function. The common affections are well described, and their treatment is dealt with in an eminently practical manner. We think it is a pity that the writer did not see his way to include the affections of the ear which are met with in everyday practice. Perhaps he will do so in some future edition.

In operating upon adenoids the author invariably uses ether as the anæsthetic, the child being held during the operation in the upright position. He states that he has had no experience of either bromide or chloride of ethyl anæsthesia, but the reviewer would suggest that he should try the latter drug, which proves so satisfactory in many hands. An anatomical error appears upon page 155 in the description of the position of the accessory ostia of the antrum of Highmore into the nasal cavity. They are there stated as opening into the hiatus semilunaris. As a rule, when there is more than one opening in connection with the maxillary sinus, the additional aperture communicates directly with the middle meatus and not with the hiatus semilunaris. In the skull figured upon page 167, a trephine wound is shown opening into the right frontal sinus. It is described as the situation preferred by some operators for entering the sinus. It seems to us to occupy too high a position upon the forehead, and is consequently misleading. If an attempt were made to enter the frontal sinus in this situation, in a number of instances the cranial cavity would be opened. Defects of this kind do not detract from the general high standard of the work, and we congratulate the author upon the excellent book which he has produced.

Lectures on Diseases of Children. By Robert Hutchison, M.D., F.R.C.P. London: Edward Arnold.

This well-written little volume makes no pretence to be an exhaustive treatise on the diseases of children, but is simply a collection in book form of some twenty lectures delivered by the author at the London Hospital some years ago.

The book has much to commend it; for, although only a few of the more important children's diseases are considered, yet they are so clearly and concisely described, and the information is conveyed in such a practical and graphic manner, that the student cannot fail to find its perusal both interesting and profitable. The author devotes considerable attention to the question of treatment, and he not only describes shortly and succinctly definite indications for the management of the different conditions, but, what is still better, he gives the reasons which have guided him in employing the methods which he advocates.

In the opening chapters the subjects of artificial feeding and the digestive disorders of infants are discussed in an interesting manner. We agree with the author that the use of condensed milk has been too universally condemned by the profession; and though it cannot be recommended for continuous use, it is a most useful temporary expedient, and often succeeds when every other method of artificial feeding has proved inefficient. The chapter on tuberculosis is one of the best in the book. The paths of infection are considered, and the symptoms and diagnosis, particularly those of abdominal tuberculosis, fully described; but we would take exception to the statement that "we would do wisely to regard every mass in a child's abdomen, where you can exclude a fæcal accumulation, as being a tuberculous deposit of some sort."

We are glad to see that the author takes a most hopeful view of the prognosis in cases of abdominal tuberculosis, and also that he deprecates early surgical interference in this condition. The diseases of the respiratory system have far too little space allotted to them, considering the very great importance of the subject during childhood, but the main difference between the physical signs in the child and adult are indicated.

Two useful chapters, one on the blood disorders of early life, and another on some medical aspects of adenoid vegetations in infancy, conclude this excellent little book, which should prove of service to the student by reason of its containing a maximum of information in a minimum of space.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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Quinquaud's Phenomenon.

A good many papers have recently appeared on this, an alleged *sign of chronic alcoholism.* The phenomenon is elicited as follows:—The subject rests the tip of his extended fingers vertically on the supinated palm of the examiner, and presses gently downwards with them. After a few seconds, in many cases, the examiner detects a slight rubbing, creaking, or grating sensation communicated to his hand from the phalangeal joints of the patients. This "phalangeal crepitation," as it is called, constitutes Quinquaud's sign, of which it was originally asserted that its presence indicated alcoholic excess. If this were true, it would be of great practical value, but unfortunately the test can only be used under certain limitations. Fürbringer (*Deutsche med. Wchnschr.*, Leipzig, 1904, No. 27) finds that while the sign is undeniably common in alcoholics, it may be absent even in the heaviest topers, and on the other hand occurs in a large percentage of moderate drinkers; it is, however, very seldom present in total abstainers. From his examination of 468 patients, Fürbringer's conclusion is that the absence of phalangeal crepitation is strongly against alcoholism in the ordinary acceptation of the word; if the sign is well marked, it points to the probability that the patient is a drunkard. Levicinek (*Wien. klin. Wchnschr.*, 1904, No. 51), noting that no satisfactory explanation of the sign has been given, has tested a number of patients to see whether there is any connection between it and ordinary tremor. His cases were mostly youthful, and only a small percentage was alcoholic; the majority suffered from tuberculosis. He finds that there is a remarkable coincidence between the occurrence of tremor and the presence of Quinquaud's sign. He did not, however, adopt the usual method of eliciting phalangeal crepitation, but laid the patient's fingers flat on his palm. If his facts as to the frequency of the sign be confirmed, it seems unlikely that it will prove of any service in the detection of secret drinking.

A New Sign in Paralysis of the External Popliteal Nerve.

Hirschfeld (*Berl. klin. Wchnschr.*, 1905, March 13) describes a hitherto unnoticed phenomenon in paresis of the external popliteal. He has found that in this condition the angle to which the foot can be dorsiflexed is less (sometimes so much so as 30° to 40°) when the leg is extended than when the limb is bent at the knee. In complete paralysis this difference does not exist, but as the muscles begin to regain power the sign develops. The difference in the range of dorsiflexion when the leg is extended and when it is flexed increases *pari passu* with the diminution in paresis up to a certain point; then, when the motor power of the muscles has almost reached normal, the difference in the range of movement diminishes, and finally disappears. The explanation of the phenomenon is simple. Normally, in the movement of dorsiflexion, a twofold resistance—the weight of the foot and the tonus of the calf muscles—has to be overcome. In complete paralysis of the extensors this cannot be done. In paresis, since with flexion of the knee the gastrocnemii, etc., are put out of action, the foot can be dorsiflexed farther in that position than when the leg is extended and the calf muscles act to advantage, while muscles which have almost recovered their power can overcome the tonus of the gastrocnemii, and hence dorsiflex the foot as well when the leg is extended as when it is flexed.

Myatonia Congenita.

Spilling (*Univ. Penn. Med. Bull.*, 1905, January) reports the clinical and post-mortem appearances of this obscure malady, to which attention was first drawn by Oppenheim in 1900. Myatonia congenita (not to be confused with myotonia) is a congenital localised or general atony of the muscles, especially of the legs. With this atony there is weakness or abolition of the tendon reflexes, striking flaccidity of the joints, and impairment of voluntary motion which may amount to almost total paralysis. When the neck and trunk muscles are affected, the child cannot sit up or hold the head upright. Even if the myatonia is general, the muscles innervated by the cranial nerves escape, and the diaphragm acts though the intercostal nerves are involved. The muscles feel soft, but are not really atrophic: the electrical reactions are quantitatively diminished or absent in bad cases, normal in slight ones. The condition is always congenital, and is just the opposite of Little's disease. Oppenheim's view is that there is arrested development of the muscles, and that it is probably not of spinal origin. The cerebral functions are normal, there is no family tendency, and it is doubtful whether or not recovery can take place. The condition has attracted little notice, and Spilling's case is the first in which an autopsy has been performed. His patient was a child, æt. 22 months, whose weakness dated from shortly after birth. He was fairly developed, not wasted, and extremely flabby. The tendon reflexes were absent. There was marked hypotonicity of all the muscles, the legs being capable of passive hyperextension on the abdomen until the heels lay behind the head. The child could not stand, or hold the head erect, nor could he sit up for more than a second or two. The fundi were normal. The following are the essential post-mortem findings:—Striking absence of cadaveric rigidity. The muscles are small and pale, the brain and cord well developed. Microscopically, no changes were found in the nervous system. The muscles had a hyaloid appearance, containing much fatty connective tissue; the fibres were small, and the longitudinal striation was indistinct. Congenital myatonia, of which this seems to be a typical case, therefore differs from progressive muscular dystrophy in being congenital, non-progressive, and without hereditary tendency, from acute anterior poliomyelitis in not occurring acutely in a previously healthy child, and from amaurotic idiocy in being non-progressive and free from fundal changes. It seems to be due to arrested development of the muscular system, and improvement may be hoped for in some cases.

TRANSITORY MYOKYMIA AND MYOTONIA.

EDSALL (*Am. Jour. Med. Sc.*, Phila., 1904, December) describes cases of violent tonic spasm of the limbs and abdominal muscles, due, he believes, to excessively hot weather. The characteristics of tetany were absent, there was no digestive disturbance, and all the symptoms subsided with great rapidity. The myokymia (fibrillary twitching) was even more pronounced than the myotonia. The following résumé of one case shows the clinical features of the attacks:—A male, æt. 31, who had previously suffered from cramps in the limbs when overheated, was suddenly seized, during very hot weather, with painful spasm of the legs, arms, and abdomen. The chief symptom was constant fascicular contractions of the muscles of the feet, legs, thighs, hands, abdomen, and forearms, giving rise to a very rapid wave-like motion beneath the skin. In addition to the myokymia there was slight carpopedal spasm, increased mechanical irritability of the muscles—a slight tap causing local painful tonus, lasting for fifteen or twenty seconds. Active movements also brought on violent spasms. There was increased excitability to faradism, but no facial irritability or Trousseau's phenomenon. Under purgation and full doses of bromide the spasms quickly subsided. Edsall's cases resemble some already reported by Talma under the name of *myotonia acquisita*, in which, however, there was little fascicular contraction, and by Kny and Schultze, in which myokymia predominated over myotonia. These observers ascribed the condition to exposure to cold; one of Edsall's patients could never swim on account of liability to cramp. The cause of the phenomena is entirely a matter of speculation; their course suggests auto-intoxication, but, on the other hand, reflex excitation from heat or cold cannot be excluded. There seems no evidence that the cramps are due to loss of fluid (analogous to those of cholera), as by sweating. In one case there was marked arterio-sclerosis, which is known to predispose to myospasm. To classify myospasms is at present fruitless. Such cases as Edsall's might be called acquired myotonia; they seem to be allied to tetany, but with these differences: their duration is short, the tonic spasm is almost wholly an intention spasm, myokymia is as marked as myotonia, and the Chvostek, Trousseau, and Hoffmann phenomena (increased electrical irritability of sensory nerves) are absent.

SUBDIVISIONS OF THE CONCRETE CONCEPT AREA OF THE HUMAN CEREBRUM.

MILLS' paper on this subject (*Med. News*, N. Y., 1904, November 5) is a most interesting and valuable one. By the term "concrete concept area" he understands the parieto-temporo-occipital region between the projection areas of the cortex, and corresponding to the great posterior association area of Flechsig. In this area are situated the centres for stereognostic perception, word-seeing, object-seeing, orientation, naming, object-hearing, word-hearing, and intonation. In this article Mills deals chiefly with the areas for *object-seeing*, *intonation*, and *colour recognition.* By the term object-, mind-, or soul-blindness is meant a condition in which the individual, no longer recalling old visual memories, cannot recognise by sight familiar objects. Mills believes that the area for object-seeing is large, and, in highly civilised man, subdivided into several centres, such as those for geometric form, for persons, and for natural objects. For permanent object-blindness the lesion must be bilateral and fairly symmetrical; transient mind-blindness sometimes occurs in unilateral lesions, such as abscess of the temporo-sphenoidal lobe. All the pathological evidence points to the existence of *centres for the visual recognition of objects in the second to the fourth or fifth temporo-occipital convolutions.* Much of the paper is devoted to a study of the brains of persons unusually gifted in certain directions—especially in the power of rapid recognition of persons or faces, or in the capacity for mechanical pursuits, the general result of recent work being that, as the peculiarity of the human brain is the unusual development of the parieto-temporo-occipital concrete concept area and the prefrontal higher psychical region, so the brains of men of high attainments show unusual development of particular subdivisions of these areas. By comparing the brains of men of talent—*e.g.* Helmholtz and Winchell the geologist—with those of Papuans, very striking differences are manifest. Mills' observations show that among the chief evidences of low development are simple type of frontal lobes, partial exposure of the insula, confluence of the central and Sylvian fissures, etc. If, as is probable, special *centres for colour* exist, they are *within or near* the *primary visual areas for light*, *i.e.* near the *cuneus and first occipital convolution.* The occurrence of congenital unilateral colour-blindness, partial or total, suggests a special localisation for this sense. Colour-blindness has occurred in cases of lesion of the left cuneus and adjacent part of the lingual convolution. In addition to this lower primary area, there is probably *a higher visual colour area in the angular gyrus*, the former representing retinal half fields, and the latter the macular region. Intonation, or the musical sense, is represented in the cortex separately from word-hearing, as the musical faculty may be retained in complete aphasia. But from the fact that both speech and the musical faculty are often lost simultaneously, one temporarily, the other permanently, they must be near, though not identical. In Mills' opinion the tone centre is in the *cephalic ends of the first and second temporal convolutions.*

SURGERY.

UNDER THE CHARGE OF

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Fractures of the Astragalus and Os Calcis.

The use of the X-rays has demonstrated that fracture of the individual tarsal bones is a much more common injury than was previously supposed. Eisendrath (*Ann. Surg.*, Phila., vol. xli. No. 3, p. 363) records a series of such cases. These injuries, he says, may be produced in one of six ways:—(1) Compression fractures, caused by the patient falling from a height and landing on the feet, are the most common. The weight of the body is transmitted to the astragalus and os calcis, which are wedged in between the bones of the leg and the surface struck, and are crushed or compressed, so that they must break. Such fractures are frequently associated with fractures of the malleoli, or with a dislocation of the astragalus. There may be a simple division of the bone into two large fragments, or they may be so splintered as to be scarcely recognisable. (2) Fracture of the neck of the astragalus from sudden dorsal flexion of the foot, results from the anterior edge of the tibia impinging upon the neck of the astragalus and cutting its way through. Fracture of the internal malleolus is frequently associated with this lesion. (3) The astragalus and os calcis may be fractured by forcible supination or pronation of the foot. These fractures are probably produced through traction on the interosseous ligaments. (4) The posterior part of the os calcis is sometimes avulsed by sudden traction exerted by the calf muscles through the tendo Achillis. These bones may be fractured also by (5) a direct crush, as in a run-over accident, or by (6) gunshot injury.

The clinical features of most value in the diagnosis are: palpation of a fragment, a position of pes valgus or varus, the evidence afforded by the X-rays, and the history of the accident. Swelling, with obliteration of the depressions about the ankle, is common to all traumatic lesions about the ankle. Crepitus and abnormal mobility can rarely be elicited, and lowering of the malleoli is seldom sufficiently well marked to be of diagnostic value. Shortening of the foot, when present, is of great value.

As regards treatment, the author recommends that in simple fractures without displacement, the foot should be immobilised at right angles in a removable case. Massage should be begun on the third or fourth day. The case should be worn for about eight weeks, after which the patient may put his weight on the foot. The pain caused by traumatic flat foot, which frequently ensues, may be relieved by a suitable steel sole worn inside the boot.

In simple fractures with displacements, if any displaced fragment threatens the vitality of the overlying soft parts, it should be cut down upon and removed. If either the astragalus or the os calcis is so badly splintered as to render its retention impossible, it may be removed without serious interference with the function of the foot. Compound injuries are treated on the general principles governing such conditions.

A POINT IN THE TECHNIQUE OF EXCISION OF THE TONGUE.

In the course of a paper on excision of the tongue, Mr. Jordan Lloyd (*Birmingh. Med. Rev.*, 1905, February) describes an ingenious device employed by him to facilitate the removal of the tongue by keeping the organ extruded during the operation. "The mouth being gagged open, and ligatures passed through the tongue tip in the usual manner, the organ is pulled out between the teeth as far as possible, the frenum and anterior faucial pillars being avoided if necessary. A stout knitting-needle, with blunt and smoothly rounded ends, is entered close to the angle of the mouth; its point is dipped deeply downwards and backwards towards the root of the tongue, into which it is thrust midway between its upper and lower borders, and pushed transversely on through to the other side, where the emerging needle lies deeply in the mouth, and must be brought forward to engage on the opposite labial angle by lifting its point forwards and drawing the angle of the mouth backwards. The needle is then pushed on until the tongue occupies its central part. By this arrangement the tongue is kept fully extruded and exposed from tip to base; the angles of the mouth being forcibly retracted at the same time. Part or the whole of the extruded organ in front of the needle may be cut away or dealt with in any other manner; bleeding vessels may be easily caught and tied; the wound surfaces may be everywhere examined, and applications applied to them if required; cut edges may be sutured together; and when the operation is satisfactorily completed, the transfixing needle is withdrawn, and the stump then falls back into position in the floor of the mouth." He has never seen the slightest after-trouble from the stab through the tongue substance, and if the needle-end be smoothly rounded, the lingual artery or vein cannot be punctured.

INFLAMMATORY STRICTURE OF THE POSTERIOR URETHRA.

The occurrence of inflammatory stricture of the portion of the urethra behind the triangular ligament has been denied by many. Le Fur (*Ann. d. mal. d. org. génito-urin.*, Paris, 1905, tome xxiii. p. 1) has studied the subject, and concludes that strictures of inflammatory origin do occur both in the membranous and in the prostatic portions of the urethra, although they are much less common than in the anterior urethra. Those in the prostatic urethra are the most rare, and usually follow on a very chronic blennorrhagia confined to the posterior urethra, and associated with chronic prostatitis, or, it may be, with the bursting of an abscess into the posterior urethra, with or without superadded traumatism. These forms of stricture progress rapidly, and seem to favour the early development of symptoms of prostatism—the so-called class of "young prostatics." They are usually complicated by recurrent attacks of prostatitis or of abscess in the prostate. Such strictures are very difficult to treat, as there are two elements to counteract—the prostatic and the urethral element. As a rule, they yield to dilatation carried beyond the ordinary limits. Electrolysis, internal urethrotomy, and massage and electrisation of the prostate, have also been successfully employed.

The Treatment of Carcinoma by the X-Rays.

Perthes (*Centralbl. f. Chir.*, Leipzig, 1904, No. 27, Beilage, p. 12) describes the results he has had in treating twenty-nine cases of rodent cancer and carcinoma in a period of eighteen months. Of thirteen cases of rodent cancer on the face twelve healed up completely in the first place. In one case, that of an extensive and deep rodent cancer in the temporal region, healing was not complete at the end of a year's treatment. These cases were treated with moderately soft tubes, mostly with one or a few sittings, the intensity of the rays being measured with the Holzknecht chromo-radiometer. Healing took place in from twenty-four to seventy days, according to the size of the ulcer. Three cases remained free from recurrence ten months after healing had taken place. In three others, treatment had to be renewed a few months after apparent cure, owing to recurrence. X-ray treatment is of especial value in rodent cancer on the eyelids and nose, since the cosmetic results are so much superior to those of operative treatment in those situations. Three cases of cancer of the lower lip were of special interest, as they all were apparently cured after one exposure to powerful rays. Disappearance of the cancer took place in from fifty to sixty days, and had lasted in one case for seven months, in the others for three months, at the time of reporting the cases. A portion of one tumour was removed for examination immediately after the exposure, and showed the appearance of a typical cancer; while a second portion, removed seventeen days later, showed only traces of degenerated cancer cells among granulation tissue.

Cancers on the floor of the mouth, of the nasal mucous membrane, and of the lungs, were treated without definite success, although tubes specially made to gain access to the parts were used. Eight cases of inoperable mammary cancer had been treated without cure resulting, although even in these cases the disappearance of metastatic deposits in the skin, and the healing of superficial ulcerations, were regularly observed. Perthes has endeavoured to determine at what depth from the surface cancer can really be influenced by the X-rays, by testing the power of the rays to penetrate the soft tissues, and his results indicate that at a depth of 2 to 3 cms. the rays act with only half the intensity which they have on the skin surface.

In answer to the question whether the rays have a specific action on cancerous tissue, or whether they act by setting up irritation, Perthes maintains that, as the results of their action follow definite laws and are in proportion to a definitely measurable dosage, often in cases in which spontaneous disappearance of the tumour never takes place, while the diminution in the cancer often begins before the inflammatory reaction, the rays have a specific action which causes the degeneration of the cancer cells. This action is probably a photo-chemical one on the chromatin of the cell nuclei.

Rare Traumatic Abdominal Lesions.

Vatter (*Centralbl. f. Chir.*, Leipzig, 1904, No. 43) records a case of subcutaneous rupture of the right gastro-epiploic artery. The patient, a man æt. 30, received a kick from a horse in the epigastric region, and was admitted to hospital half an hour later, suffering severe pain and very restless. No definite lesion was diagnosed at first, but in a few hours the signs of internal hæmorrhage were distinct, and an increasing area of dulness was observed in the right lower quadrant of the abdomen. The abdomen was accordingly opened and free blood found in the peritoneal cavity. No source for the bleeding was found till a careful examination of the pyloric region disclosed a tear of the gastro-colic ligament, and a tear of the gastro-epiploic artery, from which blood issued freely. This was ligatured and the abdomen closed after the removal of nearly a litre of blood from the pouch of Douglas. The patient made a good recovery. Vatter has not been able to find any similar case recorded.

Stierlin (*Deutsche Ztschr. f. Chir.*, Leipzig, Bd. lxxxiii., S. 462) records a case of subcutaneous rupture of the common bile duct. His patient was a woman, æt. 20, who was run over by a waggon, the wheel passing over her abdomen. No indication for immediate operation appeared, so the case was observed. For three weeks the stools were grey, the appetite was poor, and the patient gradually grew thinner. At the end of that time slight jaundice appeared, and there was distinct evidence of free fluid in the peritoneal cavity. Exploratory puncture yielded bile-stained viscid fluid. Laparotomy was then performed, and disclosed a large amount of exudate with numerous adhesions, especially in the epigastric region. On separating these and examining the bile passages, what appeared to be a small hole was found in the common bile duct, from which bile was oozing. Further examination showed that the duct was divided and the distal end could not be found. Cholecyst-duodenostomy was then performed after ligature of the common duct. The patient died of shock. Stierlin has found ten other cases recorded, mostly the result of similar accidents to that in the case recorded. Only three of the ten recovered, two after laparotomy with simple drainage of the wound, and one after a cholecyst-duodenostomy.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF

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Two Hundred Supravaginal Hysterectomies for Fibromata.

Lauwers (*Centralbl. f. Gynäk.*, Leipzig, 1904, No. 48) reports 194 successful cases, and six deaths in 200 cases. The changes in the tumours were as follows:—Cystic degeneration, five; calcification, four; cavernous change, one; necrosis in five; infection, one; malignant change, four. Eleven cases were intraligamentary, and twelve adherent to surrounding parts. The following complications were met with:—Pregnancy, four; ascites, two; peritonitis, two; ovarian carcinoma one; ovarian cysts, three; hydrosalpinx, twelve; pyosalpinx, one Forty-one patients were very anæmic, two had phthisis, three albuminuria.

ABDOMINAL AND VAGINAL EXTIRPATION OF THE CARCINOMATOUS UTERUS.

DOEDERLEIN (*Beitr. z. Geburtsh. u. Gynäk.*, Berlin, Bd. ix. Heft 2) shows that the radical abdominal operation is not an advantage. 48·3 per cent. of his cases were operated on per vaginam, with a mortality of 16·4 per cent., and permanent cure in 40·6 per cent. He thinks that cancer of the body should be considered quite distinct from that of the cervix, on account of the excellent prognosis in the former. He reports ten cases of fundal cancer well five years after operation. Doederlein extirpated the pelvic glands in sixty-five cases, 22·8 per cent. of which were found to be cancerous. Only in 9 per cent. of the cases of fundal cancer were the glands involved, and in those cases the disease had ulcerated through the uterine wall.

THE CAUSE OF DEATH IN UTERINE CANCER.

CEALAC (*Rev. de chir.*, Paris, 1904, No. 7) describes the post-mortem appearances in two fatal cases of epithelioma of the cervix. The cause of death was uræmia, as the result of compression of the ureters. In one case the ureter was dilated above the point of constriction to the size of a loop of intestine, and the renal tissue proper was converted into a mass of cysts. The urine was scanty, contained albumin; and death resulted, with well-defined symptoms of uræmia. The other case showed similar but less marked changes.

FULL TIME EXTRA-UTERINE PREGNANCY.

LINGEN (*Centralbl. f. Gynäk.*, Leipzig, 1904, No. 50) reports the case of a multipara, æt. 37, successfully operated on for an unruptured tubal sac containing a full time dead fœtus. The sac was hour-glass in form, and simulated two tumours; one contained the placenta, the other the fœtus and umbilical cord, which latter was inserted into the wall of the sac.

APPENDICITIS DURING PREGNANCY.

SCHLEYER (*Vrach.*, St. Petersburg, 1904, No. 27) describes four cases. Three were operated on, with one death. In all labour ended prematurely. The fatal case got very much worse after the spontaneous abortion, and in the case not operated on rapid improvement took place after the uterus was artificially emptied. Schleyer recommends early operation in such cases, every means being at the same time taken to prevent premature labour; but if this should occur, he recommends prompt evacuation of the uterine contents.

EXTRA-UTERINE PREGNANCY.

RUNGE (*Arch. f. Gynäk.*, Berlin, Bd. lxx. Heft 3) reports on 233 cases, observed in the Charité Hospital during a period of nine years. He finds that puerperal abnormalities and chronic gonorrhœa are the chief etiological factors, and that a period of sterility usually precedes tubal pregnancy. He gives the following conditions for operative treatment:—(1) Apparent danger to life; (2) increase in size of the tumour; (3) general condition of patient not improving; (4) protracted fever. Laparotomy he considers the best method. Hæmatoceles should be treated conservatively, if possible; if operation is indicated, posterior vaginal section is the best method.

VAGINAL CÆSAREAN SECTION.

BARDELEBEN (*Centralbl. f. Gynäk.*, Leipzig, 1904, No. 46) examined the condition of the uterus in eight cases where this operation had been performed, chiefly for eclampsia. In only one case was there a cleft in the cervix of any consequence. There was no case of displacement of the uterus, nor had there been any hæmorrhage due to the operation. Bardeleben thinks this method of emptying the uterus has many advantages over dilatation.

FORMALIN IN PUERPERAL SEPSIS.

HOERSCHELMANN (*St. Petersb. Med. Wchnschr.*, 1904) reports the following case:—Primipara, æt. 24, felt ill at the seventh month. She was delivered of a macerated fœtus, the amniotic fluid being very fœtid, and the placenta, which was expressed two hours after the birth of the child, was putrid. The temperature rose on the following day to 104°. Pulse, 150. She was treated by intra-uterine douche of boric acid; ice-bag locally, and ergot internally. Unfavourable symptoms continued for three days, when she was given an enema of a pint of 1 per cent. solution of salt containing eight drops of formalin. The bowels were cleared in ten minutes, after which the temperature fell. All symptoms of sepsis disappeared, and she made a rapid recovery.

SPONTANEOUS RUPTURE OF THE CICATRIX AFTER CÆSAREAN SECTION.

EKSTEIN (*Centralbl. f. Gynäk.*, Leipzig, 1904, No. 44) reports the following case:—P., had been twice delivered by perforation, and once by Cæsarean section. At the end of her fourth pregnancy the uterus spontaneously ruptured. On opening the abdomen, it was found that the cicatrix of Fritsch's fundal incision had given way throughout its whole extent. Porro's operation was performed, but death occurred an hour and a half later. The whole of the scar was permeated by placental tissue. Munro Kerr has recently reported a case showing that the tendency to spontaneous rupture is greatest in cases treated by Fritsch's fundal incision.

THERAPEUTICS.

UNDER THE CHARGE OF
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The Clinical Application of Streptococcic Serum.

Meyer lays down the following rules:—The serum must be of high potency. It should be prepared from fresh streptococcic cultures obtained directly from human sources, and whose virulence should not be altered by passage through animals. In testing the serum the neutralising power should be ascertained against similar streptococcic strains, which, however, are not in the possession of the manufacturers of the serum. Regarding the mode of action of the serum, Meyer does not believe in the pure phagocytosis theory. He believes that there are immune bodies present in the serum which combine with the bacteria, injuring them, and causing the bacteria to set free certain poisons contained in them. These specific endotoxins are in their turn rendered innocuous by the antitoxin contained in the serum. The damaged cocci are dealt with by the leucocytes. In support of this theory he adduces the following facts:—(1) Animals deeply infected are not cured by injections of serum, but die even sooner than controls which receive no serum. (2) Infected animals, which are still curable, show a rise of temperature a few hours after the injection before the definite fall to normal. (3) Human beings may contain numerous foci of streptococcic infection without showing any fever. Yet these patients react to small doses of serum, with a transient rise of temperature.

In the clinical aspect, Meyer differentiates between the prophylactic and curative use of the serum. In the prophylactic group is included the use in scarlatina, erysipelas, and puerperal septic endometritis, while the curative use includes all the manifestations of sepsis. The leading idea in the prophylactic use of the serum is to limit the local spread of the disease, and prevent the infection of the blood. The general action takes some hours to develop. The maximum curative effect is shown in about twenty-four hours. The duration of the action depends chiefly on the amount of the dose. The most obvious result of a successful use of serum is a fall of the temperature. This fall begins within twelve hours, and reaches its maximum in about twenty-four to thirty hours. Within the first six hours following the injection there is nearly always a rise of temperature, and a general increase in the manifestations of the disease. Even before the succeeding fall the good effect of the serum may show itself in diminution of pulse and respirations. Frequently a general sedative effect is produced, and the distressing dryness of the mucous membranes and the thirst disappear.

To particularise more carefully the indications for the use of the serum, Meyer discusses the individual applications. In *anginous cases* only those require specific treatment which show extensive destructive throat lesions, or in which persistent fever, somnolence, and severe general symptoms point to a great virulence of the streptococci. In such cases the good effect of the serum is shown by a rapid subsidence of fever under critical sweats, while the local lesions rapidly improve, with marked swelling and rapid separation of membranes.

Excellent results sometimes attend the use of a combination of antistreptococcic and antidiphtheritic serums. The prophylactic value of the serum, in severe cases of angina, is shown by the freedom from subsequent complications, such as endocarditis, nephritis, joint manifestations, etc.

In *erysipelas*, the indication for serum treatment is not so definite. The action is purely an antibacterial one, and at first causes apparent increased spreading of the disease, since all the local lodgments of the cocci in the tissues react. The serum is not required in slight cases. It should only be used in wandering cases of erysipelas, in erysipelas after child-birth or operations, and more especially when the general infection causes severe toxic manifestations. These general toxic symptoms are much relieved by good serum. A comparatively frequent result of the use of serum in erysipelatous cases is the subsequent appearance of a crop of blisters. The paradoxical picture of a spread in extent without fever is also sometimes seen. It is due to the reactionary swelling of deep-seated cocci which have already obtained a lodgment in the lymph spaces.

The use of serum in *scarlatina* is even more difficult to settle. The exact etiological value of the streptococcus is not yet fixed. Undoubtedly, in a large number of cases, the fatal issue depends on streptococcic infection, but probably there is, in addition, a hitherto undiscovered specific cause of scarlet fever. Meyer thinks that all severe cases, whether they belong to the toxic type or that in which severe throat lesions are attended by high fever, should be treated with early injections of serum. The toxic forms are possibly not much benefitted, but the throat cases present a form in which the early use of serum is followed by excellent results. The general condition and the local manifestations in the throat are markedly improved, but Meyer's somewhat limited experience does not confirm the claims of other observers that the rash rapidly fades and that the stage of desquamation is shortened. The essential value of the injections is prophylactic, to prevent the development of sepsis.

The last condition in which we can speak of a prophylactic use of the serum is in septic puerperal endometritis. Here we have a condition on the border-line between local and general infection, since, even in slight cases, bacteria circulate in the blood. Meyer sees in this condition an absolute indication for the use of serum, which acts here in a doubly beneficial manner. Its direct antibacterial effect kills off any organisms which may have gained an entrance into the blood, while it compels the organisms which have obtained a lodgment on the surface of the uterus to give up their endotoxins, which are swept away in the lochial discharges. Consequently every case of fever in child-bed, which is due to an infection, should be treated with serum. The successful effect of the serum has been shown in cases where bacteria still continue for some time in the blood without causing fever, or where metastatic abscesses prove sterile.

The contra-indications to the use of serum are important. The chief risk is that, under the reactive action of the serum, a diseased condition hitherto merely severe may be converted into a fatal illness. Therefore Meyer insists that the serum should not be used in severe pulmonary disease, in involvement of the serous membranes, infective endocarditis, or pyæmic conditions of long standing. In all these cases there is a danger that a marked reaction may convert a merely serious into a desperate condition. Similarly, it should not be used where other methods give equally good results; thus it should not be used in acute rheumatic affections, despite Menzer's glowing accounts, or in tuberculosis. Other contra-indications to the use of serum are trifling, and consist merely of rashes, transient albuminuria, numbness of the injected leg, and urticaria. Of course, wherever streptococci are found, a reaction may take place, consequently there is often increased pharyngeal or vaginal discharge for the next day or so, but this is of no importance, and passes off.

Lastly, Meyer notes that he has found, both in animal and human experiments, that the association of large quantities of saline solution intensifies the good effect of the serum. His present procedure is to inject 200 to 300 c.c. of saline solution a little before the injection of the serum. Under this combination the immediate reaction is somewhat lessened, and the increased diuresis removes the endotoxins set free in a more rapid fashion.

To sum up, the chief action of the serum is protective. Injected into a healthy individual, it prevents infection. Where there is already a local infective focus, it protects the blood. While in infected conditions of the blood it protects the vital organs, and at the same time enables the tissues to deal more effectually with the infecting germs. —*Berl. klin. Wchnschr.*, 1905, No. 8.

THE ABSORPTION OF IODINE FROM POTASSIUM IODIDE OINTMENTS.

HIRSCHFELD and Pollio have made some interesting observations on the absorption of iodine from ointments. The ointment base has a certain action. Thus lanoline is not suitable, if used alone, as no iodine is absorbed. But when the lanoline is diluted with olive oil or vaseline, absorption takes place. Vasogen is also a suitable basis. The quantity of iodide absorbed is greater if the ointment is strong than if the same quantity is made up in a dilute form. The authors are of opinion that the iodine is absorbed as free iodine, and not as the potassium salt. They are, however, unable to explain why in this case there should be no appearance of free iodine in the dressings or on the skin.—*Arch. f. Dermat. u. Syph.*, Wien, Bd. lxxii. Heft 2.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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On Plague.

Insects as plague-carriers.—Herzog (*Am. Jour. Med. Sc.*, 1905, March) gives a critical résumé of much of the literature bearing upon the spread of plague by insects, and concludes that flies and most insects are harmless in this respect. He inclines to think, however, that certain suctorial insects may carry plague, and gives particulars of a case of bubonic plague in which the cervical glands were the seat of the primary bubo. In the absence of all wounds on the head, the neck, the mucosa of the nose, the buccal cavity, etc., and in view of the fact that plague bacilli could be demonstrated in the pediculi which infested the child, he considers it probable that the infection was conveyed through the bite of pediculi coming from another individual infected with plague.

The pathologic anatomy of plague.—Dürck (*Beitr. z. path. Anat. u. z. allg. Path.*, Jena, 1904) (der Pest, 6th supplement) has written a volume of some eighty-five pages, profusely illustrated, which deals very completely with this aspect of plague. He studied the disease in Bombay, during the epidemic of 1901, making sixteen autopsies, which provided him with the material for his descriptions. The fifteen plates are beautifully reproduced, and the descriptions of the morbid anatomy of the different organs and tissues are given with great care and completeness. Hamdi (*Ztschr. f. Hyg.*, Leipzig, 1904, Bd. xlviii.) has written a similar account of the lesions found in plague tissues obtained from Oporto, Bombay, and Odessa. The most important points in these accounts are, the lymphatic gland changes, the spleen, kidney, lung, and liver lesions. It is noted that while in some glands the numbers of the bacilli are enormous, in others they are few, but in the latter case the endothelial cells are greatly swollen (this is ascribed to the toxin). The hæmorrhagic and necrotic foci found in the spleen and other organs are probably embolic in origin, though bacilli are rarely found in the vessels.

Nature of the Cell Inclusions of Cancer.

Greenough (*Journ. Med. Research*, Boston, 1905, January), from the examination of 481 specimens of cancerous and other tissues, rejects the parasitic theory of these inclusions. He gives a fair account of the literature of the subject, but it is surprising to find that he makes no reference to the able contributions to this subject made by H. J. Stiles. The opponents of the parasitic theory have attributed the inclusions to a number of different sources. Hansemann classified them ten years ago (*Berl. klin. Wchnschr.*, 1894, No. 1) as—(1) Degeneration of cells and anomalous secretion; (2) phagocytosis, (3) invagination; (4) abortive and pathological mitoses; (5) special organs of the cell archoplasm or paranucleus; (6) Extracellular hyaline drops (Russell's bodies); (7) cancer cells themselves. Greenough is of opinion that most of these sources may at one time or other be responsible for cell inclusions in cancer tissues. His results are classified as follows:—(1) The typical cell inclusions of cancer are practically constant in cancer of glandular origin; (2) they are not found in epithelioma, and are almost invariably absent in sarcoma; (3) their size, structure, and staining reactions are such as to justify the assumption that they are vacuoles in the cell protoplasm, containing a material which is coagulated and shrunken by the use of tissue fixatives; (4) the occurrence of vacuoles of this nature is chiefly a phenomenon of cell secretion; (5) similar vacuoles may be produced, however, in certain cases by phagocytosis, and by degenerations of the nucleus; (6) secretion vacuoles of the form of typical cancer cell inclusions are found in certain non-cancerous diseases of the mammary gland; (7) in such cases the secretion vacuole occupies a position between the nucleus and the lumen of the gland; (8) the inclusions in adeno-carcinoma occupy a similar position between the nucleus and the lumen of the gland; (9) in more advanced carcinoma the gland lumen is lost—the secretion vacuole cannot escape, and remains within the cancer cell to undergo further increase and ultimate degeneration; (10) cell secretion is a function which is lost in the progressive anaplasia of cancer cells, and cell inclusions are more frequent in slow-growing cancer, and less numerous in advanced cancer with rapid cell division; (11) no reason exists for the interpretation of these appearances as of parasitic origin.

STUDIES IN MAMMALIAN TUBERCLE BACILLI.

THEOBALD SMITH (*Journ. Med. Research*, Boston, 1905, February) gives the third of a series of papers dealing with tubercle bacilli from different mammals, the second having appeared in 1898. It comprises the writer's studies subsequent to 1898, and deals with the question of the existence of at least two types of tubercle bacilli, the human and the bovine. He gives details of various tests by which these two types can be distinguished from one another, the most interesting of which is the reaction produced by them in glycerin bouillon cultures. The bouillon should not be fermented. It is made up with 1 per cent. Witte peptone, and the acidity so calculated that it will be near 2 per cent. when the bouillon is finished. This is usually accomplished by neutralising to 1·5 or 1·6 per cent. after the peptone and salt have been added to the boiled and filtrated beef infusion; phenolphthalein must be used as the indicator. The glycerin, 3 to 5 per cent., is added before the final autoclaving. The glycerin bouillon is autoclaved in flasks (Erlenmeyer or Feurbach), in layers of 2 to 3 cms. deep. In the summer months, when the atmospheric moisture is high, it is well to place sterilised tinfoil over the plugs before autoclaving, and to renew them each time the flask is opened for titration, and replaced. When the bouillon is inoculated with scales of tubercle bacilli from glycerin agar cultures, the floating masses soon begin to expand, and after one or two months a complete membrane will have formed over the relatively clear bouillon. The bacillary masses, which fall to the bottom at the outset, increase but slightly in size. This well-known mode of growth is followed by all the races of mammalian tubercle examined by the author after they had acquired a certain saprophytic habit. The reaction of the bouillon during the formation of the membrane will take one of two directions. The flask should not be opened for the purpose of testing this, until the tubercle bacilli have covered the bouillon completely. The testing may be repeated every two or three weeks thereafter. In the case of bovine tubercle bacilli, the reaction approaches the neutral point, and then reaches an alkalinity of about 0·1 to 0·2 per cent., and remains permanently alkaline, in the case of human tubercle bacilli; on the other hand, the acidity may diminish during the first month, to increase again during the second, and fluctuate more or less afterwards, without, however, reaching the neutral point. This test is simple and valuable, but it can only be carried out with tubercle bacilli which have become sufficiently saprophytised to grow in glycerin bouillon. Bovine cultures require more or less time, and may take more than a year after isolation to grow a distinct pellicle. In all cases, well-known bovine and human types of tubercle bacilli should be inoculated parallel with any new culture to be grouped, and the test should not be limited to one lot of bouillon unless the result is clear and decisive. The following may be summed up as the distinctive characters of the bovine bacillus:—(1) The short, plump form (this is occasionally got in human sputum, and should suggest a bovine source); (2) the very feeble, sparse multiplication in cultures at the outset; (3) its virulence for rabbits and guinea-pigs (this is greater than with the human bacillus); (4) its power to produce extensive lesions in cattle; and (5) its reaction even tending to and reaching a feebly alkaline level. Another interesting question is the relation of other mammalian tubercle to these two types. The author studied three cat bacilli, and they gave the reactions characteristic of the bovine form. He suggests that tuberculous cattle may infect cats, and that tuberculous cats may infect children, the passage of the bovine bacilli through cats possibly rendering them more acceptable to the human body. Another culture obtained from a horse was found to belong also to the bovine type, and one from the dog to the human type. Those obtained from man may belong to the bovine type. Further study is needed before we can accurately estimate the relative number of cases of tuberculosis in man due to cattle, so that the practical preventive measures to be employed may bear some economic relation to the danger incurred. They may at present be too severe. One of the most interesting of the speculations touched upon by the author is the question of the varying virulence of tubercle bacilli isolated from man, excluding those referable to cattle. Several writers, *e.g.* Vagedes, Lartigan, and recently Viszpremi (*Centralbl. f. Bakteriol u. Parasitenk.*, Jena, 1903, Abth. Origin. 1, Bd. xxxiii. S. 176), have shown that a considerable range of pathogenic power is possessed by such bacilli. They sink into insignificance when contrasted with the virulence of bovine bacilli. It is of great importance to determine whether any sharp line of demarcation can be drawn through these varieties, and whether we may be able to trace modified bovine bacilli in the human body. This glycerin bouillon test may help in this direction, for the difference between the bovine and human type appears to consist in part in a different behaviour towards glycerin in cultures. Unless this difference is merely quantitative and not qualitative, it is likely to persist in the different hosts. If this should prove true eventually, we may be able to detect degrees of virulence in bovine cultures, and they would then represent degrees of adaptation to another host, tending toward a final type in that host. Variation in virulence is a phenomenon which is probably founded upon important principles of parasitism, and its relation to origin or source of the bacteria in another host needs careful investigation.

DISEASES OF THE EAR, NOSE, AND THROAT.

UNDER THE CHARGE OF
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The Nose in its relation to Asthma.

Dr. Greville MacDonald returns to the interesting and much discussed question of the relation of the nose as a factor in the production of asthma. He divides his own cases of asthma into three classes—(1) Those in which the relief or cure of asthma is obtained by removing obstruction to easy breathing; (2) those where the treatment of any other abnormality in the nose is similarly successful; (3) those where the mere cauterisation of mucous membrane in a comparatively healthy nose results in cure. That the removal of any obstruction in the nose may result in the cure of asthma has been well established. In the author's experience the most favourable form of obstruction is hypertrophy of the erectile tissue, and he has obtained the greatest amount of success in asthmatics in dealing with enlargements of the anterior ends of the inferior turbinals. Next in importance, in his opinion, is any irregularity of the septum, causing pressure or obstruction to easy breathing. With regard to the relation of adenoids and asthma, MacDonald states that he cannot refer to one case of cure after operation upon post-nasal growths, unless there was some coexisting obstruction in the anterior nares. In cases of nasal polypi, while he has found the affection ameliorated by their removal, the prognosis as regards the asthma is singularly uncertain. There are a sufficient number of facts to establish a relation between nose disease and asthma as cause and effect, notwithstanding the impossibility of classing them together in a working theory, and of venturing a prognosis in any individual case.

Turning next to the second series of facts in which there is no nasal obstruction, but where the treatment of an unhealthy mucous membrane helps or cures the asthma, we find that there are definite reasons for assuming an intimacy between the nose and bronchial tubes. A large proportion of asthmatics are also sneezers, and an attack of sneezing often precedes an attack of asthma; often, too, a patient will declare that the first warning he has of an attack of asthma is blocking of the nasal passages, which open up again as the dyspnœa ceases. There is often to be observed in habitual asthmatics a general œdema and anæmia of the nasal mucosa. In these cases, whether the œdema is associated with sneezing or asthma as the chief complaint, or whether the two are associated, the electric cautery may be used with the happiest results, especially when the œdema is pronounced over the upper part of the triangular cartilage of the septum. In the author's opinion, the treatment of any hypertrophy of the mucous membrane in the anterior region of the nose by means of the cautery is attended with beneficial results.

The third group of cases, where cauterisation of the healthy mucous membrane gives relief, is even more interesting. MacDonald is a strong supporter of the observations made by Alexander Francis, who pointed out that the great majority of asthmatics can be cured by cauterisation of the upper part of the cartilage of the septum. The author refers to three cases in which asthma supervened for the first time after the removal of nasal polypi. In one of these cases the asthma disappeared when the nose again became blocked on the recurrence of the polypi.

To summarise, we may say that any treatment which allays the irritability of the nasal mucous membrane, whether by operation and the ventilating of abnormally protected areas of mucous membrane, or by hardening the hyperæsthetic areas with the electric cautery, may modify or arrest the onset of the catarrhal attacks, whether they manifest themselves in symptoms of sneezing, laryngitis, bronchitis, or asthma.

THE ULTIMATE RESULTS OF CAUTERISATION OF THE INFERIOR TURBINATE.

GOODALE (*Boston Med. and S. Journ.*, 1904) thus summarises the results of histological examination of the nasal mucous membrane after the application of the cautery—(1) Caustic applications may cause a loss of the columnar, ciliated epithelium, with a replacement of it by cells of the squamous type. (2) Such applications may cause an obliteration of the canaliculi in the basement membrane. (3) Immediately below the cauterised mucous membrane new connective tissue may be formed, which extends downwards to a depth dependent upon the intensity of the trauma. (4) The contraction of the tissues, which is observed clinically, is due to the contraction of this new-formed connective tissue and the consequent compression both of the lymph sinuses and of the lumina of blood vessels and glands. (5) Cystic dilatation of the glands may follow this contraction and contribute to a subsequent return of the nasal obstruction.

Chronic Pemphigus of the Mouth and Throat.

Farlow reports (*Trans. Am. Laryngol. Assoc.*, 1904) two cases of chronic pemphigus of the mouth. This condition is not common, and the uncertainty regarding its nature, and the mistakes made in diagnosis, warrant attention being called to the subject. The obstinate and chronic character of the affection is well illustrated in the second of Farlow's cases, and may be briefly quoted as typical of the condition. The patient was a woman of 55 years of age when she first came under observation. She had then suffered for some considerable time from crops of blisters, which appeared upon the lips, gums, and inside of the cheeks without any apparent cause. Although at first not very painful, they had latterly become so. They presented the appearance of slightly raised, reddish swellings, with raw surfaces on the gums near the upper front teeth. The mucous membrane forming the blisters became detached, or formed partially detached white flakes. Crops of these blisters appeared from time to time in different situations, such as the gums, cheeks, palate, and nose. Ulceration of the right cornea occurred, which was followed by loss of sight; the left eye also gave a good deal of trouble. Apparently the larynx had never been affected. For seven years she had suffered more or less in this way. Many years before the onset of the mouth affection, the patient had had an eruption on the leg and foot, which might have been pemphigus of the skin. The patient was under treatment by arsenic for nearly a year, and considered that the blisters were to a large extent kept under control.

The study of the mucous membrane manifestations of pemphigus has been more thorough of late. Cases of this kind can be divided into two groups—those in which the eruption appears upon the mucous membrane and the skin at the same time, and those cases in which the mucous membrane of the mouth, nose, pharynx, larynx, and conjunctiva alone are affected. The affection is characterised by the appearance of irregular white patches, formed by an elevation of the epithelium, giving rise to bullæ, which only last for a short period, and which are then replaced by areas of partially detached epithelium. Repeated crops of these blisters may form. In rare cases the first eruption may be accompanied with fever, but usually the patients are troubled only with increased salivation, and with difficulty in chewing and swallowing. The primary eruption may heal, and the whole process appear to be at an end, but nearly always a recurrence takes place after a longer or shorter period. If the recurrences are infrequent and at long intervals, the process may go on to cure, but more frequently repeated crops follow each other at shorter intervals, the mouth and throat become more or less denuded of epithelium, and the individual fails by reason of malnutrition. Contraction and adhesions between opposing surfaces may result. The diagnosis is not always easy, at any rate in the first instance, and many cases have been considered as irregular forms of syphilis. The association of ulceration and synechiæ upon the conjunctiva is a great aid in diagnosis. The lymphatic glands are not as a rule enlarged, and the lesion does not appear upon the tonsils. As regards prognosis, some writers consider that the primary appearance of pemphigus on the mucous membrane is an important sign of the serious form of the disease; it may run a very chronic course even for some years, though some observers take a graver view, and regard it as terminating fatally in two years. In treatment, it is necessary to keep the teeth and mouth clean, and if the pain is severe, the local application of cocaine and orthoform may be required. Caustics may be applied to the ulceration. Internally, arsenic in large doses is strongly recommended.

PUBLIC HEALTH.

UNDER THE CHARGE OF

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Disinfection of Tuberculous Sputum.

H. Vincent (*Rev. d'hyg.*, Paris, tome xxvii. No. 1), in this connection, gives some extremely valuable and practical information, stating the results of experiments made by him with such substances as ferric sulphate, chloride of zinc, perchloride of mercury, carbolic acid, mineral acids, lysol, alkaline bases, and alkaline hypochlorites.

While admitting that disinfection of sputum by heat is the best method, he points out that this method, though well adapted to the use of hospitals, is more difficult of application in private practice and in individual houses. Moreover, until the sputum reaches the sterilising apparatus, it is dangerous and capable (if spilt) of disseminating the tubercle bacillus on floors, walls, bed-clothes, etc. Hence the addition of an antiseptic to the spittoon is very desirable as diminishing danger during the transference to the disinfecting apparatus, and minimising the risk to those collecting, sterilising, and washing the vessels.

Commercial chloride of zinc, he found, had no effect on sputum as a disinfectant for *B. tuberculosis*. Ferric sulphate, perchloride of mercury, carbolic acid, and mineral acids possess only "an uncertain and insufficient action on sputum." Disinfectants which rapidly and strongly coagulate albuminous matter should not be used for the sterilisation of sputum. Their use only gives illusory disinfection, and in the case of some of the substances almost none, as regards sputum. For this reason, as also on account of its poisonous nature in the strength required (3 to 5 per 1000), perchloride of mercury should not be used.

The ideal disinfectant agent for sputum should possess, according to Vincent, the following qualities:—(1) Absolute and rapid antiseptic action on *B. tuberculosis*, (2) the power of thoroughly penetrating and mixing with the expectorated matter, (3) absence of toxicity, and (4) cheapness. As a result of his experiments, he concludes that lysol (10 per cent.), caustic soda (10 per cent.), and hypochlorite of lime in concentrated solution (about 1 in 10) subsequently diluted to 20 per cent., are the three most active disinfectants for tuberculous sputum. All of them, however, do not offer the same practical advantages. Adding to the bulk of sputum an equal quantity of the solution, he obtained the following results:—Lysol (10 per cent.) is a good disinfectant, absolutely destroying *B. tuberculosis* after twenty-four hours' contact. It is a little less energetic than the other two, it requires to be thoroughly mixed with the sputum, and its price is against its general use. Hypochlorite of lime in dilution of 20 per cent. kills the bacilli in sputum after six hours' contact. This substance is cheap, but alters by keeping, losing much of its germicidal power. The solution does not mix well with the sputum. Its odour in sickrooms is troublesome, the smell of chlorine exciting coughing. Its use should be restricted to the disinfection of sputum in well-ventilated apartments, such as workshops, etc., where the smell will not be irritating. Soda in 10 per cent. solution ensures the perfect sterilisation of sputum in six hours, or even less. It dissolves and liquefies the sputum, which does not then adhere to the sides of the spittoon, and the cleaning of these receptacles is accordingly greatly facilitated. There is also no smell produced by its use. The objections to it are its causticity and the absence of colour, which might lead to accidents. To prevent its confusion with other liquids, he suggests that it be coloured with litmus and kept in specially shaped and coloured bottles. The results from the use of potash were slightly less favourable than those obtained from soda. The following table shows the results got with soda and potash solutions of different strengths. The sign (+) indicates the survival of *B. tuberculosis* in the sputum; while (−) indicates sterilisation, and that a negative result was obtained by inoculation of guinea-pigs with the treated sputum:—

Duration of Contact with Antiseptic.	Potash Solution.			Soda Solution.		
	5 per cent.	10 per cent.	20 per cent.	5 per cent.	10 per cent.	20 per cent.
Six hours . . .	+	+	−	+	−	−
Eight hours . .	+	−	−	−	−	−
Twenty-four hours .	−	−	−	−	−	−

In Vincent's opinion 10 per cent. soda solution, coloured as suggested, added to equal bulk of sputum, is the best for use both in the sickroom and in hospital wards, public institutions, barracks, etc. In hospitals provided with an apparatus for the sterilisation of the sputum by heat, there is no contra-indication to the use of an antiseptic in the spittoons, and the soda solution offers the advantage of cleansing the spittoons at the same time as it liquefies and disinfects the dangerous sputa.

The Destruction of B. typhosus and B. coli in Water by Copper Foil.

Experimenting with the method proposed by Moore and Kellerman for the purification of water supplies by means of copper, as published by the United States Department of Agriculture, Henry Kraemer, Ph.D., of Philadelphia (*Am. Med.*, Phila., vol. ix. No. 7), has obtained some very interesting results with the use of copper foil. By placing pieces of freshly cleaned copper foil about 25 cm. square in 2000 c.c. or 2500 c.c. of water, and allowing the vessels containing the water and foil to remain for from four to eight hours at room temperature, he found that a reduction of from 85 per cent. to 97 per cent. in the total number of micro-organisms in the water was effected. This reduction is about equivalent to what is obtained by efficient sand filtration, with the added advantage that the micro-organisms are completely destroyed. The results of his experiments with water inoculated with *B. typhosus* and *B. coli communis* are even more striking. He worked with water under three different conditions, namely—(*a*) distilled water, prepared from tap water by first treating it with potassium permanganate, and subsequently distilling it three times by means of an apparatus constructed entirely of glass; (*b*) filtered tap water, *i.e.* filtered through a Berkefeld filter attached to a copper spigot; and (*c*) tap water, collected after being allowed to run through a copper spigot for five minutes. All these were sterilised for thirty minutes by steam at 110° C. The samples of water so sterilised were 200 c.c. in bulk, and contained in Erlenmeyer flasks, and to each was added two loopfuls of an eighteen to twenty-four hours' bouillon culture of typhoid bacillus or *B. coli communis.* One set of flasks had nothing more added to them. To each of the flasks in the other set there was added a strip of clean copper foil 15 mm. wide and 18 cms. long, corrugated in such a way that the entire surface was exposed to the water. All the flasks were then incubated at from 35° C. to 37° C. The number of typhoid bacilli or of *B. coli communis* was determined immediately after inoculation and at stated intervals. The results obtained are shown in the following tables:—

I. *Experiments with B. coli communis.*

Plates Made.	Water without Copper Foil.			Water with Copper Foil.		
	Triple Distilled Water.	Filtered Tap Water.	Tap Water.	Triple Distilled Water.	Filtered Tap Water.	Tap Water.
At time of adding culture.	7,746	11,246	8,283	8,866	4,410	6,790
At end of four hours.	7,655	5,075	7,665	no organisms.	no organisms.	no organisms.
At end of eight hours.	7,735	3,115	7,000	,,	,,	,,
At end of twenty-four hours.	1,000,000	1,000,000	1,500,000	,,	,,	,,
At end of forty-eight hours.	1,200,000	1,600,000	2,000,000	,,	,,	,,
At end of six days.	1,200,000	1,000,000	1,200,000	,,	,,	,,

II. *Experiments with Bacillus Typhosus.*

Plates Made.	Water without Copper Foil.			Water with Copper Foil.		
	Triple Distilled Water.	Filtered Tap Water.	Tap Water.	Triple Distilled Water.	Filtered Tap Water.	Tap Water.
At time of adding culture.	3740	4750	3675	3986	127	1400
At end of four hours.	2835	no organisms.	3815	no organisms.	no organisms.	no organisms.
At end of eight hours.	3850	,,	1995	,,	,,	,,
At end of twenty-four hours.	3750	,,	1435	,,	,,	,,
At end of forty-eight hours.	3815	,,	1540	,,	,,	,,
At end of six days.	1850	...	...	,,	,,	,,

The theory advanced by Kraemer to explain the disappearance of typhoid bacilli in filtered tap water to which no copper foil had been added, is that it may be due to "the presence of extremely small quantities of copper dissolved by the water in its necessarily slow passage through the copper spigot to which the filter was attached." To this phase of the problem he is at present devoting attention. From his experiments, however, he concludes that "the intestinal bacteria, like colon and typhoid, are completely destroyed by placing clean copper foil in the water containing them," and that "the householder may avail himself of a method for the purification of drinking water by the use of strips of copper foil about 3½ in. square to each quart of water, this being allowed to stand over night, or from six to eight hours, at the ordinary temperature, and then the water drawn off or the copper foil removed."

OBITUARY.

Sir John Sibbald.

The death of Sir John Sibbald, which occurred on 20th April, at his residence in Edinburgh, has removed from the ranks of the distinguished alienists in this country a man to whom no small share of credit is due for the excellence and enlightened character of Scottish asylum administration during the last forty years.

Sir John's early education was received at Merchiston Castle School, and afterwards at Edinburgh University, where he took the degree of M.D. in 1854.

After graduating, he went as House Surgeon to Perth Hospital for a time, then proceeded to Paris to study, and finally became an assistant physician at Morningside Asylum.

The same influence which this great institution has exercised upon so many of those who have entered its portals as junior members of the staff, combined, no doubt, with a natural inclination towards the study of mental disease, decided his future career.

Accordingly, after leaving Morningside, Sir John paid a visit to Berlin in order to study under the great alienist Griesinger, from whose teaching he imbibed many of the principles which guided his subsequent work.

In 1862 he was appointed Medical Superintendent of the Argyll Asylum, and in 1870 he became a Deputy-Commissioner in Lunacy, followed in 1878 by his appointment as Commissioner. This latter position he held for twenty-one years, until the age limit necessitated his retirement from the service.

His work as Commissioner was publicly recognised by his receiving the honour of knighthood in 1899; and amongst those who are more intimately acquainted with asylum administration, his period of office will be remembered as one closely associated with a policy of steady and enlightened progress.

Sir John was ever the friend of those methods of reform in the treatment of the insane which tended to discard the old ideas, and to recognise insanity as only one of the many diseases of the nervous system.

He advocated, early in his career, that asylum treatment should have more similitude to a hospital régime than to that of a prison, and he lived to see this humane view adopted and carried out even more thoroughly than possibly he had ever thought probable.

Sir John Sibbald published several interesting contributions to the literature of mental science, amongst the best known of which was a paper to the Royal Society on "Statistics of Suicides in England and Scotland." In this he contended, as opposed to the common opinion upon the subject, that suicide was not increasing throughout the country. His views upon this question, although ingenious, are not generally accepted, more especially in the light of the most recent statistics.

If there is one characteristic which stands out more than any other in Sir John Sibbald's work, it was thoroughness. Everything he undertook was carried out with an energy, and, at the same time, an attention to detail, which made him a strong friend or a powerful, although always generous, opponent.

His high courtesy, ever kindly disposition, and, not least, the cheerful fortitude with which he bore himself during the last few months of an illness the fatal significance of which he knew only too well, will be long remembered by a wide circle of friends.

REPORTS OF THE MEDICAL SOCIETIES.

Glasgow Pathological and Clinical Society.—*April* 10, 1905. —Dr. Henry Rutherfurd in the chair.—Sir Hector C. Cameron showed a patient suffering from actinomycosis. When first seen there was a large swelling of the right cheek, apparently unconnected with the jaws. An abscess formed, from which a large quantity of pus was evacuated, in which the characteristic organisms were found. At a second operation, some time later, scraping brought to light a grass-seed (the species of which could not be exactly determined), which doubtless was the bearer of the infection. How it had entered the cheek was not clear, but, at any rate, it had come from within the mouth.—Dr. J. R. Riddell showed a series of patients illustrating the effects of treatment with X-rays. This included two cases of round-celled sarcoma, six of rodent ulcer, one of epithelioma of the lip, four of lupus, and two of keloid. The results, on the whole, were very satisfactory.—A joint communication on the subject of glanders in man was introduced by Dr. R. M. Buchanan. Dr. A. K. Chalmers spoke of the prevalence of the disease in various stables in the city, and the public health and economic considerations related thereto. Dr. J. W. Anderson read notes of three cases in man; Dr. J. Cockburn Syson read notes of one case in man; Dr. R. M. Buchanan demonstrated the pathology of the disease by microscopic and museum preparations from man and the horse; and Mr. J. R. M'Call, M.R.C.V.S., spoke of the rapid increase in the number of cases, the value of the mallein test for purposes of diagnosis, the necessity of obtaining further powers to prevent the spread of the disease, and gave reasons for believing that it was responsible for more deaths among men than was generally imagined.

Glasgow Medico-Chirurgical Society.—*April* 7, 1905.—Dr. Thomas Forrest read notes on a case, recently the subject of acute exudative choroiditis, with complete amaurosis of two weeks' duration, and recovery.—Dr. Alexander M'Lennan showed—(*a*) A case where the knee-joint was drained; (*b*) two vermiform appendages. One was full of thread-worms; the other was filled with a cord of inspissated fæces.—Dr. George B. Buchanan described a case of malignant disease of the thyroid gland, with involvement of the sympathetic and recurrent laryngeal nerves. The patient, a man, æt. 43, was admitted to hospital on account of inability to swallow. Bougies could not be passed. The day after admission, gastrostomy was performed. The power of swallowing was gradually regained, and the opening in the stomach closed. The patient untimately died of some pulmonary trouble, believed to be phthisis.—Dr. THOMAS H. BRYCE read a short paper on "Fertilisation, conjugation, and the physiological heterotype mitosis in relation to the Cancer Question," with lantern illustrations.

FORFARSHIRE MEDICAL ASSOCIATION.—*April* 7, 1905.—Dr. ORR, Tayport, in the chair.—Mr. GREIG showed a child upon whom he had performed subtrochanteric osteotomy for coxa vara. He exhibited stereoscopic photographs of the condition before and after operation, showing the improvement that had taken place. He also showed a screw-nail removed from the trachea of a child, the position of which was first indicated by the X-rays, a photograph of which was shown. The kidney from a case of congenital hydronephrosis in a child 5 years old was also exhibited. It contained 122 oz. of fluid when removed.—Dr. DICKSON, Carnoustie, showed a large calculus removed from the urethra by perineal incision.—Dr. SCOTT presented a child 3 days old, born with an unusual form of suppurative dermatitis. An excellent specimen of the whole skin of the hand, shed like a glove, from a case of keratolysis neonatorum, was also shown.—Professor KYNOCH showed specimens of suppuration in a large uterine fibroid and an ovarian cyst.—Dr. R. C. BUIST read notes on three cases of grave jaundice. In introduction he stated that he used the words grave jaundice as a literal translation of icterus gravis, and by it he meant, severe jaundice associated with unconsciousness. The first case was that of a woman in the seventh month of her fifth pregnancy, who in a previous pregnancy had a transitory jaundice. On admission to hospital she was in a state of coma and collapse, very marked jaundice, vomiting, constipation, petechial hæmorrhages, and all the other symptoms described in acute yellow atrophy. The liver dulness was greatly diminished; there was no leucin or tyrosin in the urine. Two pints of normal saline solution were introduced into the left breast, and five ounces of saline given every two hours per rectum; calomel and mist. alb. were given by mouth. After twenty-four hours, the bowels being still unmoved, a large soap-and-water enema was given, which proved effectual. The saline enemata were continued for several days. Under this treatment, in spite of the onset of premature labour, the patient made a complete recovery. The second case was that of a woman who with catarrhal jaundice of a few days' standing suddenly became unconscious and delirious. The bowels were found to be overloaded, and a sharp purge was quickly followed by recovery, with no bad symptoms. The third case was also that of a woman, who, suffering from jaundice, suddenly developed grave symptoms similar to the first case. No leucin or tyrosin was found in the urine. Death took place on the seventh day after the onset of bad symptoms. On post-mortem examination the liver was found to be very small and shrunken, very soft and flabby, showing on the surface and section orange-yellow patches. Coloured drawings of the degenerated condition of the liver cells, as seen on microscopic examination, were exhibited. The condition was without doubt one of acute yellow atrophy of the liver.—Professor KYNOCH read a paper on "A Retrospect of one hundred Gynæcological Laparotomies."

EDINBURGH
MEDICAL JOURNAL.

EDITORIAL.

Scottish Student Life. An interesting volume has just been issued, under the authority of the Students' Representative Council, entitled "Twenty-One Years of Corporate Life at Edinburgh University," in which is traced, in the enthusiastic diction of Mr. J. I. Macpherson, the evolution of our academic social affairs during the past two decades. It is a record of rapid growth, checked here and there by threatening retrogressions. Mr. Macpherson writes with the pen of an optimist; his vision is upon a hard shapeless rock carved by the hand of a patient and ingenious sculptor into a fair image of radiant youth. It is an inspiring subject, as fit for poesy as for prose, and yet not outside of the merciless hands of the critic. Conan Doyle, in one of his earlier novels, speaks of his Alma Mater as nothing else than a "great unsympathetic machine," destined to convert the raw material into a marketable article. That was before the days of the Representative Council and the Union, when the only club at the disposal of the majority of students was the public-house, and the chief playground the open street.

> "Like drift spars which meet and pass
> Upon the boundless ocean plain"

they seemed, in the eyes of the man whose vision had been stimulated by the study of the social life in the great English Universities. Since those days there has been much active interest taken in the civilisation of the human side of our academic life. We have come to regard our universities as more than mere examining bodies; we have tried to justify their claim—they are really "benignant mothers," and not machines for the turning out of degree-laden graduates at so much a head. In the dark ages of the past the student used to steal silently into our halls, cram his head with facts, eke out a monotonous existence in his diggings, varied by an occasional outburst, often of a very squalid nature, before the eyes of the public, and then, like an academic Arab, gather up the rags of his learning and his parchment diploma and depart in peace, leaving behind him few regrets and fewer to regret him. It is very difficult for many of us, who possess the capacity of carrying our own environment of pleasure with us, to imagine the utter desolation of those who, requiring more concrete forms of entertainment, have starved their social instincts to death from want of a sympathetic supply. How tragic have been some of the histories of the Scottish student in the past, who, being more than mere bookworms, have looked in vain for that spirit of *camaraderie*, which, when existent, is one of the most burning passions.

> ''Alone, alone, and all alone,
> Alone in a lonely world,"

expresses what many must have felt as "cribbed, cabined, and confined" in their musty lodgings, away up near a murky sky in some Warrender Park high land, they drew out the long thread of their dreary existence. It seems only yesterday that the University was merely a four-guinea-in-the-slot machine; its professors vague unapproachable men of learning, who inspired awe, sometimes contempt, but seldom affection, and our fellow-students fellow-sufferers with social instincts crushed under the heavy foot of a social starvation. No wonder that from time to time the sphinx-like submission to this deadening influence gave way to wild outbursts of revolt, terminating often in the interference of the police, sad shakings of heads on the part of parents, and stern jurisprudence on the part of the University authorities. But time has rung its customary changes, and to-day the means at the disposal of the student for civilised amusement are extensive and varied. But it must not be imagined that the last word has been spoken on the question; what has been accomplished is merely a sort of preliminary canter. We have not yet really entered on the race of collegiate life as it is properly understood. Professor Patrick Geddes and his colleagues have done much, and will probably do more, but the time is ripe for some more ambitious schemes than they have been able to undertake. Now is the millionaire's chance. It is said that the average member of this class is in a parlous condition, in that he finds it difficult to discover suitable outlets for his plethoric moneybags. Here is something waiting to be done. Half a dozen colleges in Edinburgh with accommodation for a couple of hundred students each, would go far to solve the problem of corporate life. Students would then come to Edinburgh knowing that they would be able to participate in that priceless influence, the environment of a college life, and be able to take away with them, along with their degrees, the fruits of a beneficent social influence, and the record of a life which would serve as a precious and a consoling memory when the evil days come, when desire shall fail and life is a weariness to the flesh. Let, then, this great ambition be kept continually before us—"nought that abides in it, daunting us—onward." Let the successes of the past be an earnest of the future, and let the fathers and sons of the nation realise that the game of social life in the University has collegiate life as its goal. If the Students' Representative Council can push the game forward to such a successful issue, they will doubly earn the tribute paid by Sir Alexander Grant to their president in 1884—"Gentlemen, you have saved the Republic."

Entente Cordiale Médicale.

THE stars in their courses have fought for the success of our visit to France. Sunny skies, gentle breezes, and smiling seas rendered the pilgrimage to Paris a pleasure, while the brilliant capital in the beauty of spring, radiant with green leaves and white blossoms, was decked out in festal array to receive her visitors. The genial welcome given by nature was reflected in the warm greeting extended to us by our French hosts. At Calais and in Paris deputations received us as we entered and left the special train which had been courteously placed at our disposal by the Northern Railway. The British Ensign and the Tricolor, in sisterly embrace, waved over our heads, while in reception-rooms appropriated for the purpose, beautifully decorated with shrubs and flowers, orations of the most enthusiastic character were made. Such was our welcome to fair France; it was an augury of the happiest significance, and the auspicious omens were not belied by the sequel.

The public functions were of the most interesting character. The reception at the Sorbonne, where M. Liard, Rector of the University, welcomed the visitors on the evening of their arrival, gave a tone of enthusiasm to all the subsequent gatherings. The Faculty of Medicine in their quaint robes, headed by the Dean, M. Debove, received the guests in the classic building in the Rue de l'Ecole de Médecine—a most picturesque and historic gathering. At the Hotel de Ville a most brilliant reception was held by the President of the Municipal Council, M. Brousse, a member of the medical profession. The magnificent edifice, with its mural treasures, was thrown widely open to the guests; the finest military band in France sent harmonious strains through the spacious apartments; and our hosts hailed us with joyous acclamation. The same warmth was shown at the headquarters of the Department of Public Assistance—a body representing what in this country would be hospital managers or governors, and poor-law guardians or managers—where a large number of the visitors were received by M. Mesureur, Director of the Administration. Undoubtedly, however, the most interesting function was the gathering at the Pasteur Institute, where the guests were received by M. Roux, Director of the Institute, and by Madame Pasteur. A wreath was laid upon the tomb of the illustrious founder, with an appropriate oration by the Dean of the Medical Faculty of London University, a tour of inspection was made of the different parts of the institute, and a visit was paid to the adjacent Pasteur Hospital. This is intended solely for the treatment of infectious diseases, and each patient is absolutely isolated by glass partitions. The public functions also included a delightful visit to Chantilly, presented to the French Institute by the Duc d'Aumale, a theatrical entertainment at the Automobile Club, and a banquet in the Grand Hotel, at which about four hundred sat down to dinner, and brought the gathering to a triumphant conclusion.

While these graceful entertainments were carried out in the afternoons and evenings, the mornings were well filled with more serious work. Not one of us was like *le Roi d'Yvetot*, "se levant tard, se couchant tôt"; no, affairs were absolutely the converse. It would be impossible to sketch out the visits paid to the different hospitals, but three of these were of great interest—to the Hôtel Dieu, when M. Dieulafoy and M. Lucas-Championnière acted as the chief guides; to the Hôpital Necker, where M. Huchard received the guests; and to La Salpêtrière, in the theatres and wards of which M. Raymond and M. Déjerine gave most admirable demonstrations. Historically, the Necker Hospital, founded by the famous Mme. Necker, is to the physician far and away the most interesting of all Parisian medical institutions, for it was in its wards that Laënnec worked and taught. His successor, the famous Professor Huchard, cordially received a large number of "cardiophiles," as he humorously termed them, showed them the Amphithéâtre Laënnec, produced the treasured stethoscope of the great master, to which he daily says his prayers, and demonstrated some of his methods of diagnosis and treatment.

We must not raise the curtain upon the private entertainments of our hosts. Suffice it to say that the most lavish yet gracious hospitality was shown by M. and Mme. Bouchard, M. and Mme. Huchard, M. and Mme. Triboulet, M. and Mme. Lucas-Championnière, M. and Mme. Landouzy, and others of our friends. At these, as at all the public gatherings, the utmost cordiality was shown.

There can be no doubt as to the kindly feeling now existing between the two great neighbours. To a great extent this is due to the genial wisdom of our Sovereign, but the rapprochement has deeper springs than this; it is due to the growing appreciation by each country of the character of the other. In this increasing respect and esteem the solidarity of science counts for much, and our warmest thanks are due to M. Bouchard, President, and M. Triboulet, Secretary, of the Paris Committee for the labours which they undertook to render the union of the men of science and medicine a success. We may conclude with the words with which Dr. Ogilvie ended his eloquent speech at the banquet: "La France et l'Angleterre, unies pour le progrès et pour la paix."

Cerebro-Spinal Meningitis. THERE appears to be little doubt that epidemic cerebro-spinal meningitis has got a foothold on the continent of Europe, and that we in this country may expect its presence at any time in an epidemic form. Sporadic cases have already been reported in several districts. In America it has caused a very large number of deaths during the last few months, and although we are informed that the disease is losing its epidemic character, it has become more or less endemic in several of the large cities. From all parts of Germany cases have been reported, and the Prussian authorities are wisely distributing information and advice in regard to the disease amongst the medical profession and the general public. Fortunately for us the advent of summer is a favourable circumstance which will militate against the spread of the disease, but it is to be hoped that we shall not allow ourselves to be lulled into a sense of security by this fact, or by the belief that there will be time enough to adopt preventive measures when the first signs of an epidemic occur.

It is true that we do not know definitely by what channels the disease is disseminated, and that it is not regarded as an infectious disease in the ordinary sense of the term. But our very ignorance should make us careful and teach us to err rather on the side of stringency than laxness. It may not be infectious in the same sense that scarlet fever is, but we do know that its spread is apparently favoured by the same conditions which are found to be associated with the occurrence of typhus fever, namely, insanitary surroundings—overcrowding, dirt, and all the usual concomitants of poverty in large cities. Everything points to the advisability of dealing with epidemic cerebro-spinal meningitis in the same way as the infectious zymotic diseases. New York came to this conclusion in the end, and Germany has adopted it in the official advice which is being circulated there.

The suggested precautions are—early notification; strict isolation; disinfection of rooms and contacts; prevention of children who have been exposed to infection attending school; provision of facilities for the bacteriological diagnosis of the disease. The duty of guiding sanitary authorities lies with the Local Government Board, and we would suggest that the same action which was adopted by the Board and met with such marked success when there was a threatened invasion of cholera, and more recently of plague, namely, sending circulars of advice to local authorities, might with advantage be carried out in regard to cerebro-spinal meningitis.

Lead as an Abortifacient.

ALTHOUGH lead even in ancient times was popularly considered to possess a specific action on the genital organs, yet it is only within recent years that its criminal use as an agent for procuring abortion has come prominently under notice. In 1893, Dr. Pope of Leicester recorded two fatal cases of lead poisoning, in which diachylon plaster had been taken for the purpose of bringing on abortion. Lehmann has denied that lead plaster produces any toxic symptoms, but evidence as to its disastrous effects as a poison and abortifacient has gradually accumulated, until it may safely be affirmed that it is one of the most common and certain agents in the production of abortion at the present time.

The criminal employment of diachylon plaster in the Midlands of England, and also in certain parts of northern Germany, has been frequently reported: while quite recently Dr. Arthur Hall has published a striking account of the prevalence of lead poisoning amongst women in a comparatively limited district of South Yorkshire. He found that ten out of eighteen women who suffered from symptoms of plumbism admitted having taken some form of abortifacient, while there was also strong reason to suspect the same cause of illness in the others.

In some of these cases an unexpected source of the poison was discovered in patent pills, which on analysis were found to contain lead. These pills bore the usual label, "Dr. ——'s famous female pills are world renowned and unequalled, etc." Of the eighteen cases referred to eleven aborted.

These facts serve to indicate that medical men must keep the possibility of lead poisoning in view, even in districts in which accidental plumbism is uncommon, and that obscure cases of abdominal pain, vomiting and constipation in women of child-bearing age, may have their origin in such a source.

The much wider question is also raised, whether the sale of a deadly poison and powerful abortifacient should be allowed to go on under the thinly veiled pseudonym "female pills."

Pinard on Fibroids and Sterility.

THE much-debated question whether fibroids are a source of sterility, or sterility the cause of fibroids, has again been opened by Pinard (*Ann. de gynec. et d'obstet.*, Paris, 1905), in which he attempts to prove his convictions from the latter standpoint.

The basis of his argument seems to rest on the following premises:—(1) The coincidence of pregnancy and fibromyomata is rare, according to the statistics of the Baudelocque clinic—171 cases in 21,891 labours. (2) Elderly primiparæ were more commonly the victims of fibroids—eighty out of ninety-four were over 30 years of age. So much importance did he attach to this, that he enunciates the maxim, "Whenever you come across a primipara 30 or older in the lying-in room, cherchez le fibrome." (3) Secondary sterility in parous women was frequent in the victims of fibroids. His arguments are undoubtedly laboured, and are no more convincing than those of his predecessors, such as Emmet. They may be met as follows:—(1) Pregnancy and fibromyomata are seldom coincident on account of the presence of the tumour. (2) Fibromyomata usually develop after the age of 30. Young primipara are therefore more or less immune. (3) Parous women after they develop fibroids in the later years of sexual life, cease to become pregnant, hence secondary sterility. The last argument seems almost incontrovertibly in favour of the opposite view, to which Pinard takes, and demonstrates that the development of fibroids is a most potent barrier to pregnancy in a woman who has previously borne children.

Voyages d'Etudes Médicales.

THIS title refers to a scheme for extending the reputation of the health resorts in different parts of France. In September of each year a certain district is selected, and all the health resorts, spas, and seaside places are visited. This year it is the turn of the Western Pyrenees, a district celebrated for its beautiful scenery and historic associations, and containing among its health resorts Luchon, Cauterets, Eaux Bonnes, Pau, Biarritz, and many others. The company consists of medical men, who may bring their wives, and of medical students from all parts of Europe. The opportunity for making a personal acquaintance with the places visited is a most valuable one, the arrangements for the comfort of those taking part in the tour being all that could be desired, while the total expense is extremely moderate. For the sum of twelve pounds there are obtained fourteen days' travelling by first-class special train, and the best of hotel accommodation. When it is considered that these days are spent in beautiful surroundings, in extending one's knowledge of men and of places, to say nothing of practical therapeutics and the French language, it must be admitted that the return for the outlay is more than abundant.

It is a reproach too often levelled with justice against the members of the profession in this country, that they know nothing of foreign health resorts, and are quite content to persevere in their ignorance. Against this it may be urged that the acquirement of such personal knowledge is liable to be expensive and time-consuming, and not always justified by results. The facilities provided by the *Voyages d'Etudes Médicales* are calculated to remove those difficulties, and to aid consequently in the cultivation of a branch of therapeutics which is assuming an ever-increasing importance.[1]

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[1] Particulars may be obtained on writing in English to Dr. Carron de la Carrière, 2 Rue Lincoln, Paris.

ORIGINAL COMMUNICATIONS.

ON THE CAUSATION OF DISEASE, WITH SPECIAL REFERENCE TO TUMOUR GROWTH.[1]

By JOHN CHIENE, C.B., M.D., LL.D., *Professor of Surgery, University of Edinburgh.*

(PLATE XXI.)

THIS is the last time that I shall address the majority of my present audience in their collective capacity as graduands. In one sense you may look on this as a graduation address—as a send-off. Dying as graduands, you will live again, I trust, as graduates.

It requires some assurance on my part to address you to-day, when I find that my friend Professor Osler has a fixed idea of the uselessness of men over sixty. I am glad, however, that he appreciates the great value of living with the young in order to maintain "a fresh outlook on the new problems of the world." We can only hope that he will take care to avoid the dons and associate with the undergraduates at Oxford. There are risks in cultivating the acquaintance of the undergraduates. Let us hope that the Regius Professor of Medicine may not suffer at the hands of the proctors. I am sure we all trust that it may be many years before Professor Osler has to be introduced to the "Happy Dispatch Office." I think it is a good thing for the world that he has come to Oxford—another rivet towards the formation of the Anglo-Saxon Empire with its common language and, broadly speaking, its common ideals, on the strength of which depends the welfare of the world.

These remarks arise because I have during the recess had my mind on a problem to which I referred in the senior clinique in March. At that time I delayed speaking out, in deference to the wishes of members of my clinique. I thank them, more especially as in the recess I have had that time which is necessary for meditation, and which is not granted to a teacher during session.

"It is for each to utter that which he sincerely believes to be true, and adding his unit of influence to all other units leave the results to work themselves out" (Herbert Spencer).

Nine years ago, when I delivered the promoter's address to the graduates, I indicated certain views regarding the close relationship of the mental to the physical side of disease. To-day I recur to these views, and as nine years ago I was, so to-day I am, encouraged by the teaching of my dear master the late Professor John Goodsir. Anything worthy is of him and from him; anything unworthy must rest on my shoulders. Virchow dedicated the English edition of his great work on "Cellular Pathology" to John Goodsir. In that book, published in 1858, there are many views published by Goodsir in 1842. Having done this in ignorance of Goodsir's work, Virchow tried to make the best amends in his power when he, in his dedication, spoke of Goodsir as "one of the earliest and most acute observers of cell life."

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[1] Introductory Lecture to the Class of Operative Surgery in the University of Edinburgh, April 1905.

Goodsir taught me that in order to study the cell we must first study the man; we must approach the study of the microcosm by a study of the macrocosm. The life history of the one is the life history of the other. The life history of a colony of cells is the combined life history of the individual cells in the colony: so also the same thing is true of the life history of a community, of a nation, of a world.

Goodsir groups the actions of a man under three heads:—

1. Actions in relation to himself, his corporeal state, his animal nature. Under this head come rewards for well-doing and punishments for ill-doing. If you *will* do what is wrong, you will be punished; if you *will* do what is right, you will be rewarded. I have never been able to see that anyone can benefit by this method of treatment. It is an appeal to the animal in man; its motto is *self*.

2. Actions in relation to his neighbour. The very opposite of selfishness is here unfolded—non-self, unselfishness.

3. Actions in relation to his Creator, the Supreme Lawgiver.

Or, as Oliver Wendell Holmes says, there is a part of you known to your neighbour, a part known to yourself, a part known to your God. The first two are variables—your corporeal frame, your animal instincts on the one hand, your self-consciousness or conscious intelligence on the other; the third is a Constant.

Goodsir has left three addresses, the first in 1856 to the students of the Royal Medical Society of Edinburgh, of which he was twice president; the second in 1857 to practitioners, when he was president of the Medico-Chirurgical Society; the third in 1859, when he addressed the graduates on Graduation Day. Let me give you a few quotations from these addresses. "Health essentially consists in the *harmonious* performance of all the functions of the being." Disease is disharmony. He speaks of the philosophy of disease, and holds that the greater liability of man to disease is intimately related to his higher conscious intelligence. We are too apt to look for the disturbing causes, he tells us, "in the dissecting-room and the pathological theatre, and to forget that their most influential elements are beyond the reach of the knife or the penetration of the microscope."

Now all this, true of a man, is also true of a cell. In it you have the constant warring between the two variables: in *health* they are balanced—in *harmony;* in *disease* there is a want of balance—they are in *disharmony*.

The cell since Goodsir's time has been *seen* to be a most highly developed organ, with the two great characters impressed on it, nutrition and reproduction; with a power of assimilation and rejection, with a power of secretion and excretion, and with a central body which acts to the cell as the brain does to the man. Augustus Volney Waller (1816–1870), the father of Professor Augustus Waller the physiologist, a man of intense foresight, who in 1846 directed attention to the diapedesis of the white blood corpuscles, called the cell "la cellule neuro-géné-trophique," a combination of nerve energy, reproduction, and nutrition. Let us look to an earnest worker now living; what does Ehrlich say? "In every living cell there must exist an *active central body* and a number of other chemical groups or side chains. These groups have the greatest variety of functions, but especially those of *nutrition* and *assimilation*," and, he might have added, *reproduction.*

Look at the complexity of the explanation given of what occurs when a toxin molecule approaches a cell; how it enters, if it has "the key to open the lock," as a burglar opens a treasure room. Either it kills the cell or is killed by it. If it is killed by the cell, observe how the cell by its inherent power not only supplies the loss that it has suffered in the fight, but supplies an extra quantity of poisonous material, which escapes from the cell into the fluids and there attacks any of the toxin molecules of the *same species* as the original poison. This is called the antitoxin (Weigert's overproduction theory).

I might, if I had time, show you how the very same thing happens if an evil thought enters our bodies, how it kills or is killed; if the latter, we are *for a time* contrite, and our tissues are rendered invulnerable *for a time* to other attacks of the same species of evil.

But there is another action inherent in the cell, not nutritive but reproductive. Here also you have two *variables*, the *maternal element* and the *paternal element.* Let me read to you what I said in 1896:—"Our bodies are made up of these cells, and there is going on within us (in these cells) the double process of nutrition and reproduction, which is in every particular the prototype of the processes of nutrition and reproduction as we see them in the higher animals and in man, with all the physical forces in full play, so closely associated with these two great manifestations of life. In each cell we have, possibly, the *father side* (the paternal), with its outcomes, strength, courage, endurance, self-reliance; and the *mother side* (the maternal), with its outcomes, tenderness, gentleness, unselfishness, and self-sacrifice." To understand what I mean by the terms maternal and paternal, let me premise by saying that the words *hereditary* and *acquired* do not appeal to me. I would divide the psychical and physical endowments of the "human" into four groups:—(1) Those acquired from our ancestors; (2) those acquired from our mother in utero; (3) those acquired from our surroundings; (4) those acquired from ourselves.

The terms "maternal" and "paternal," as I understand them, come under the first and second groups: but they may be modified under the third and fourth groups, probably after puberty, by two important organs, the *testicle* and *ovary;* in their essence, however, they are derived from our ancestors.

Now every man, every cell, every group of cells—in other words, every organ—has a hidden and an open function. The open function of the testicle is to form spermatozoa, of the ovary to produce ova, both necessary for the continuance of the race. The man carries the one, the woman carries the other, as you would carry a burden; it is not really a part of you: but the hidden functions handed to you from your ancestors are an integral part of the man and the woman, and both exist in every man and every woman.

When does the hidden function give evidence of its presence? When does it end? Does the open function begin to modify the hidden function at birth or only after puberty? Does it end when the open function ends? The open function of the ovary ceases about 45 years of age; the open function of the testicle only ceases with the death of its host. Does the modification of the hidden function of the ovary cease when the ovary ceases to perform its open function?

I have not time to discuss these questions, but for my present purpose I hold that, if the ancestral—maternal and paternal—elements can be modified by the testicle and ovary, we are justified in assuming that we may modify the maternal and paternal by therapeutic means. If the maternal is in excess, we may restore the balance by adding to the paternal or by subtracting from the maternal. If the paternal is in excess, we may restore the balance by adding to the maternal or by subtracting from the paternal. The method of addition is, as far as I know, the method available if we prepare in a chemical laboratory the appropriate remedy, and administer it to the individual by the mouth, by local injections, or by inunction. If, on the other hand, we desire to proceed by subtraction, we must use the living laboratory, and find an animal in whom, when the material is injected, it will act as a poison, and then by a process of immunisation we shall obtain an antitoxin which will, when introduced, diminish the element in excess and restore the balance. At the graduation ceremony recently held, I saw the graduands pass before the Principal in the McEwan Hall. I saw them as the vehicles, the hodsmen, the red blood corpuscles, the *carriers* of the open function, self-evident, and all important to the accoucheur and for the continuance of the race; but I also saw in each the two hidden functions *maternity* and *paternity*—hereditary, ancestral, the brains, the white blood corpuscles, all important in relation to our daily work as physicians and surgeons. I asked myself, were they balanced? or, if unbalanced, could the balance be restored? Was the unbalancing only temporary, or was it permanent and irremediable? Let us grasp, however, the cardinal fact that the maternal + was not necessarily in the women, the paternal + in the men, and let us ask ourselves if these hidden functions can be of any interest to us in an attempt to explain the causation of disease—disharmony—and in the treatment of disease—a restoration of the harmony which Goodsir laid down as the *essential* to a state of health.

Now let me apply these remarks to the causation of tumour growth. Ever since Dr. William Russell drew attention for the first time to peculiar bodies in carcinoma, a search has been made by many investigators to try to find an organism in cancer. Commissions in this country and in America are now sitting; they have worked hard, and the sum of it is that "it is a supreme mystery," that it will "only be explained when we understand what life is."

No problem that was ever given to *homo sapiens* is insoluble: sooner or later, all will be known. Let us not, therefore, be cast down. I would ask, Are we on the right track to solve this "supreme mystery"? Locke, in his chapter on "Bottoming," tells us that "we are to accustom ourselves in any question proposed to examine and find out on what it bottoms." Let us go in for a little "bottoming."

In the consideration of the life history of anything living we must consider—(1) its tissues, (2) its surroundings, (3) its adaptation to these surroundings.

In a state of health it is able to adapt itself to its surroundings, to utilise what is good, to resist what is deleterious. A departure from a state of health—disease—is due to its want of power to resist these deleterious surroundings. It has lost its power of resistance; this power is resident in its tissues. At present, as regards malignant neoplasms, the majority of investigators are endeavouring to discover the deleterious agent which is the cause of the growth. I ask a consideration of the condition in the tissues which enables the deleterious agent to act. I ask what change has taken place in the tissues which enables the deleterious agent to act upon them. In other words, what has rendered the soil fertile, so that the deleterious agent has the power to gain a footing and to grow? If I am right, the tumour starts because of a want of balance in the two elements (paternal and maternal) in the cell, and it continues growing because that want of balance is present in the surrounding cells or in the fluid by which the cells are bathed, that is, in the cell food. If we define disease to be a departure from a state of health due to an abnormal agent, then the question before us is not, What is the nature of the agent? but, What enabled the agent to act?

What is the power in the tissues analogous to the power which enables a "human" to resist temptation? What enables the tissues to say "No"?

My view is that the agent acts when the two elements in the tissues have lost their balance. This loss may be due to a difference in the weight of the elements, or the balance itself may have become imperfect in its working. To explain what I mean by loss of balance in the cell, let me take an illustration of a boy at either end of a plank of wood balanced on a support. They swing themselves up and down in harmony; that is health. Disease is a loss of harmony due either to one of the boys becoming heavier, or, as most frequently happens, to the plank being displaced very slightly one way or other from its support on which it was properly balanced, so that one end becomes heavier. There you have disharmony; that is disease. Death is an overthrowal of the plank, an irremediable condition in which the molecules must be reunited in order that another life may arise.

Another question must arise in the mind of any one who has followed the argument so far. Are both elements in each individual cell, or is the paternal element in one cell and the maternal element in another? It matters not; it is their conjunction and the results of that conjunction with which we have to deal. The bachelor cells and the maids, young and old, do not interest us. They must exist, and they must have their use, but the bearing of that existence and of that use on our present subject need not detain us. I would just say that, as in human beings, their function in the community is psychical and not physical. The cells, then, may be unisexual or hermaphrodite, it matters not for my argument.

Now we know of three methods of reproduction—that great opposing force to individualism, to selfishness; for the birth of the first child and its imperfections drew out the best in woman the mother, and after a time in man the father.

(1) Adult—child—adult—child.
(2) Adult—child—child—child—adult.
(3) Adult—child—child—child—child.

(1) is the simple tumour, (2) the borderland tumour, (3) the malignant tumour. That is my view. The third is typical of a malignant tumour; early uncontrolled maternity is its essence. The young cells may reach the adult stage, but this is not the rule; the cells divide when unformed and undeveloped; they reproduce their like when in their childhood. Why? Because of their excessive reproductive power, their excess of maternity. The cells of a person predisposed to tumour growth have the maternal element in a marked degree.

The simple tumour is M+.
The borderland tumour is M++.
The malignant tumour is M+++.

Now, it may be said, what is your proof that in people who grow tumours the condition is maternal +? I have no proof as yet, but from analogy, and from the excessive growth—the characteristic of maternity—I think it is more likely to be that disharmony than paternal +, more likely to be polygamy than polyandry. Anyhow, it is "a supreme mystery," and any working hypothesis is preferable to my present condition of dense darkness.

It is a suggestion which suggests the remedy, and, if the remedy acts, the suggestion becomes a reality. Let us restore the balance by administering in one form or other, or in one way or other, the essence of the testicle. That is the crude method, but with my present light the only method. Am I to give it by the mouth, by local injection, or by inunction? I am not advising its administration in place of free excision, but I am thinking of its use when recurrence (is it recurrence?) takes place, and when metastases have occurred. In a local (so-called) recurrence it may still sometimes be possible to remove the recurrent nodule or nodules. If not, then inject locally at the seat of recurrence; but if there is metastasis, then internal administration is our only hope.

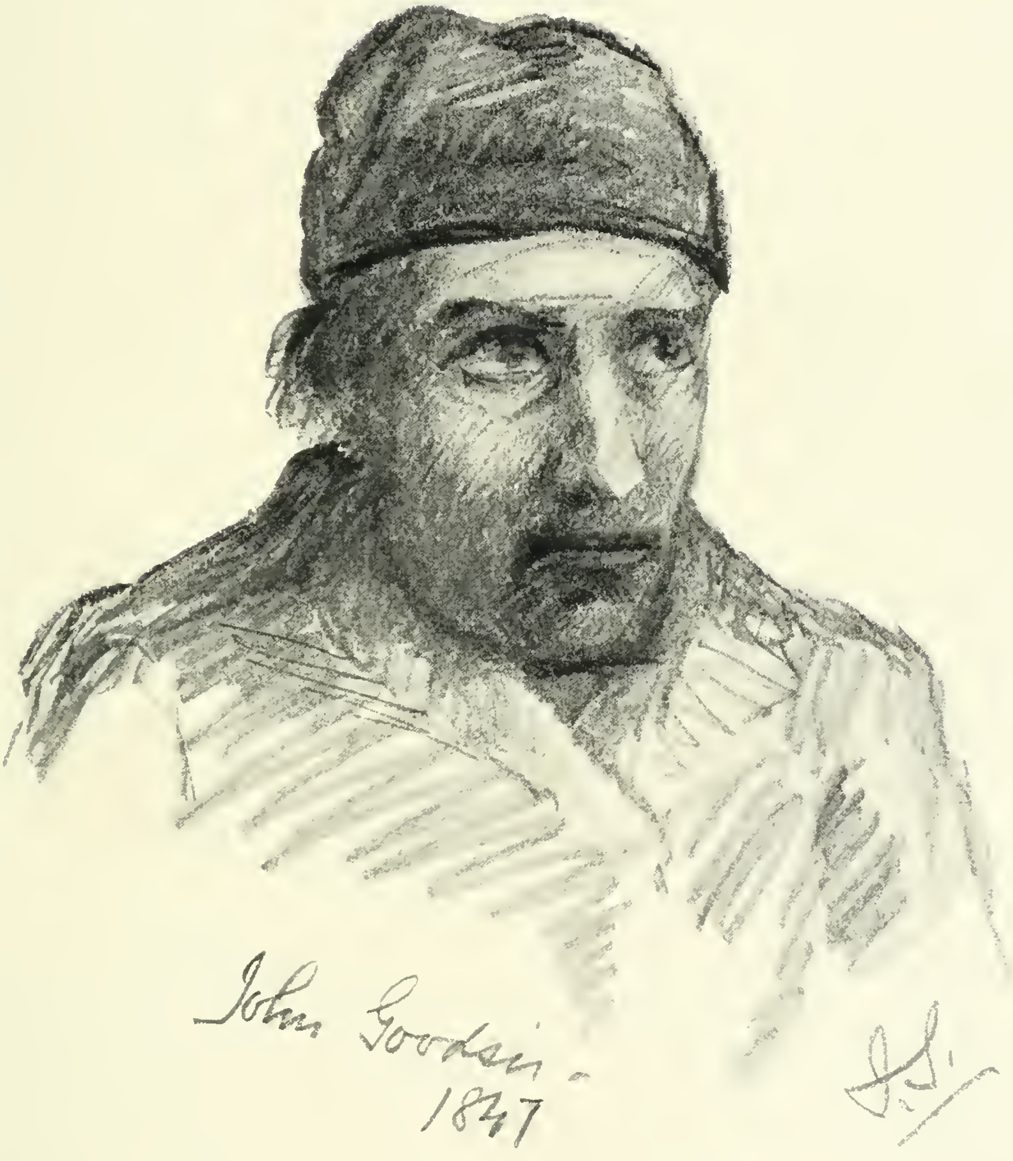
Burroughs, Wellcome, & Co. supply, under the name of *Didymin*, an extract of rams' testicles in tabloid form for internal administration. I am using it at present in all my patients, hospital and private, with malignant tumours. I am anxious, however, to obtain the testicular material in a form suitable either for internal administration or for local injection, as is possible in the case of *Hemesine*, the active principle of the suprarenal body. Burroughs, Wellcome, & Co. have suggested the preparation of a glycerin extract of testicle, and believe that pigs' testicles are the richest in the distinctive testicular substance. I have asked them to prepare, if possible, an extract of pigs' testicles in tabloid form, which may be dissolved and administered by injection if desired.

I may say in passing that the answer that is given, when asked to explain why the secondary growths are like the primary growth, will no longer be that "like breeds like," but the answer will be that the cells, having migrated to distant parts, probably for food (as men and women do when they migrate), have there found in the fluids a food with the + maternal element, and that they grow like the original tumour because they have been supplied with the same food. So also in a recurrent nodule, a stitch or a ligature is the irritant, the maternal + is present, and the cells grow at the seat of the irritant. If this is so, the administration must be general, not local, as the condition is a general one.

But all this is a very crude way of attacking the maternal +. I aim at subtraction from the maternal, not addition to the paternal. How is this to be done? Mr. W. J. Stuart is undertaking in the pathological department, with Professor Greenfield's kind sanction, experiments founded on the experiments of Metchnikoff on cytolysis, in which sera cytotoxic with reference to various forms of cells have been obtained, just as an antitoxin is formed when a toxin is introduced in repeated increasing doses which immunise the host. I wish Mr. Stuart to try to form an anti-maternal material, an antagonist to the maternal+. Cytolysis is cell destruction, cytosecosis is cell balancing; it is at restoration of the balance within the cells that I aim. I wish him, by injecting the fluid from a sarcoma or a carcinoma into an animal, to render that animal immune, and the animal's serum will contain a substance antagonistic to the maternal element; this can be tried on patients, after explaining to them that it is of the nature of an experiment. Instead of the fluid from a sarcoma or carcinoma, repeated doses of an ovarian extract may be given to an animal, and then the animal will, if immune, supply an anti-maternal remedy. I suggested at the meeting of the Medico-Chirurgical Society in March, when Dr. Beatson read a paper on the etiology of cancer, that his treatment by oöphorectomy may do good in so far as it removes the organ in the body which is the emblem of maternity, and which possibly supplies the loss of the maternal element in the female.

Some diseases may be due to a paternal+ in the cells and fluids of the body. In that case an anti-paternal serum must be prepared by repeated injections of the essence of testicle into an animal so as to render the serum anti-paternal. When I remember that carcinomatous and sarcomatous people rarely suffer from septic fever after operation, I should like very much to see this anti-paternal serum used in a septicæmia or pyæmia, in a gonorrhœal joint, in acute rheumatism, or even in chronic rheumatism.

I sincerely trust that what I have said will stimulate some one to devote his energies to the study of the question, Why is the cell fertile to an abnormal agent? Too many are, in my opinion, spending their time in searching for that "abnormal agent." If the suggestion which I now make turns out to have in it some germ of truth, then it follows that the tendency to cancer is acquired from our ancestors; and, secondly, that the abnormal agent is not likely to be a specific irritant or its products. Any irritating substance, any abnormal agent, may start the process, if the fluids have the maternal element in sufficient excess. If the abnormal agent is powerful, then a very little want of balance may be sufficient; if it is weak, the balance must be very much out of gear before the abnormal agent can get a foothold. The effect of an irritant depends on two factors—(1) The strength of the irritant; (2) the power of resistance (or, as I would say, the power of balance) in the tissues.



John Goodsir
1847

With one thing at the recent graduation ceremony I was much pleased. I noted that among the LL.D.'s the fighting man received the greatest ovation, and that the scientific men were nowhere. I also noted that the allusions to the literary man having taken part in the war in South Africa seemed to be most highly appreciated by the audience, mostly composed of women, showing that in them the paternal element was strong. So, I reasoned, they will not grow cancers.

The realist will say that to bring forward any theory on such a sad world-spread calamity as "cancer" before it has been put to the proof by experiment, will simply raise false hopes, unsettle poor sufferers, and do no good. A. J. Balfour tells us that the natural sciences are leaning more and more on idealism. I would not, however, launch any theory for that reason, but possibly there may be a germ of truth in the suggestion I have made. Truth's way has often been over roads of error: we cannot have truth without error. My great desire, however, is to stimulate you who have the "Osler test of usefulness," that is, who are under 40, and ask you to study the cell rather than to be searchers after the abnormal agent. Both are necessary, but let the main question be, What is it in the cell that makes it behave in so peculiar a manner?

I trust also that the suggestion and the view I have indicated of a remedy will stimulate experiments. The darkness is so great that any ray of light, however feeble, is as refreshing as a shower in a dry and parched land. "It shall come to pass afterward that I will pour out My spirit upon all flesh; and your sons and your daughters shall prophesy; your old men shall dream dreams, and your young men shall see visions."

"Help us to understand Thy works;
Thy mighty laws reveal.
Give us the soul to sympathise,
The hand to heal."

The portrait of John Goodsir, which accompanies this paper, is a copy of a pencil sketch drawn from life in the University dissecting rooms by Dr. John Smith, LL.D., Surgeon-Dentist to the King in Scotland, who kindly gave me the original sketch, and who has courteously allowed me to reproduce it. A drawing by John Smith, when a student, of John Goodsir at work in the dissecting rooms in 1847 will, I trust, be of interest to all Edinburgh students of medicine.

SOME MEDICO-LEGAL RELATIONS OF INTEMPERANCE.[1]

By STANLEY B. ATKINSON, M.A., M.B., B.Sc., *of the Inner Temple, Barrister-at-Law, London.*

IT is just three centuries since the first Act was passed which penalised "the loathesome and odious sin of drunkenness . . . to the great dishonour of God and abusively wasting the good creatures of God." Since then many pertinent questions relative to forensic proceedings have been raised for discussion by those interested in the possible medico-legal associations of the man addicted to POTUS. There are questions of immediate fact, involving skilled medical evidence; they rank as illustrations, and arise in the mass of unreported cases concerning intemperance. Thus, how can the condition of incipient or profound drunkenness be proved for practical purposes and differentiated from certain comparable disorders—in other words, was this private citizen or that public servant "under the influence of drink" as alleged at a stated time? It is to be remembered in this connection that the fact of intoxication, if and when alleged in Court, must be proved by the affirmer, for not only may the Bench or the jury be semi-sympathetic with the "weakness," but the law presumes sobriety in all men. Again, it may be questioned: Is this man "an habitual drunkard"? There are also numerous occasions demanding the application of principles of law; when judicially decided they rank as precedents. Thus, the fact of actual drunkenness, or of mental debility owing to the chronic abuse of intoxicants, being proved, what possible legal consequences—advantageous or disadvantageous—can result? Considering the fact that so many men on recovery from a bout of drinking disclaim any desire to have become drunk, is it right to speak of *voluntarius dæmon*, or, with Baron Alderson, of "a madness for which the madman is to blame" (R. *v.* Meakin, 1836, 7 C. & P. 297)? Do the Lunacy Laws apply to this class of "voluntary madness," *dementia affectata*, and, further, should these laws embrace the subjects of toxic mental insanity as evidenced by the various types of delirium, including *delirium tremens*? If a man becomes chargeable upon the rates by his voluntary excess, should not proceedings be instituted to recover from him the cost of treatment? What, apart from the vague terms of the Act, is "habitual drunkenness"? thus, are the victims of each and every drug habit, the *narcomania* of Norman Kerr, to be regarded as exemplifying the definition? for they are all the subjects of a similar moral catastrophe. May habitual drunkenness, with its attendant annoyances, be matrimonial cruelty in law? if not, is that condition a sufficient ground for the judicial separation of husband and wife under the powers of a Court of Summary Jurisdiction? (Robson *v.* Robson, 1904, 68 J. P. 416 D.) *Vide* Note.

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[1] Read before the Society for the Study of Inebriety, April 11, 1905.

Beyond the interpretation of special statutes, we are not concerned with the principles of legislation, either punitive or preventive; the whole matter, in fact, may be summed up by the question: Under what circumstances may a man, or his compromised representatives, appear in Court upon an allegation of the fact of previous alcoholic or other intoxication?

There are three sets of circumstances when such an appearance may be made:

1. A man may have to appear as "a police court inebriate," "a drunk," charged by a police constable (who, under the Licensing Act, 1902, may detain him in the lock-up until he is so charged) with having made himself a public nuisance on a single occasion; if the offence is repeated at sufficient intervals, he may, under the Inebriates Acts, be dealt with as "an habitual drunkard." A fine usually results; alternative imprisonment, however, may follow certain public and dangerous exhibitions of drunkenness, as where, under sec. 12 of the Licensing Act, 1872, disorder or riot was caused, with drunken drovers and drivers (including *semble* automobilists), with those handling loaded firearms, under the Licensing Act, 1902, with those in charge of a child under seven years of age, and lastly, with those infringing special bye-laws to that effect. Under the Vagrancy Act, 1824, and the Summary Jurisdiction Act, 1879, "idle and disorderly persons" may be incarcerated; "habitual drunkards" may have their personal freedom curtailed. The police complain that, where at times they had to deal with a drunken and violent, brutish working-man, the magistrates the next morning have brought before them a sobered and repentant British working-man, with whom they may be deceived into sympathy in spite of the constable's evidence.

2. A man may wish to be relieved by the Court from the legal consequences of some untoward conduct during what, the jury are persuaded, was a fit of drunkenness leading to the alleged criminally or civilly obnoxious results. Seldom will this plea avail, and to succeed at all he must show that his contemporary state was one of actual intoxication—not merely that he was a recognised toper (H.M. Advocate *v.* Dingwall, 1867, 5 Irv. 466). The legal view is that drunkenness aggravates the wrong done, it is not an excuse; as Lord Coke quotes approvingly, *nam omne crimen ebrietas et incendit et detegit.* Commonly the plea of intoxication is set up in mitigation of a serious indictable passional offence or of the consequential penalties thereof; it is claimed that the offender's conduct was banefully influenced by the liquor

he had just taken; in such criminal charges proof of delirium tremens is his only safe defence. Occasionally the plea appears in civil suits. Philip sober may desire to annul an alleged contract entered into by Philip drunk. A man's personal representatives may desire to reduce his propounded last will which was executed while his treatment included a course of alcohol, either voluntarily imbibed or taken under medical direction, as in the so-called stimulant treatment of *morbus cordis.* The intoxicant may be alleged to have disturbed the normal balance of the man's mind or the intelligent exercise of his mental faculties, so that he erred in vision and stumbled in judgment, and perhaps totally forgot the "delivery of his act and deed," or the "placing his signature at the foot or end thereof" respectively. The legal effect of a testator's signed and attested will is not annulled by his burning it when himself consumed by a passionate fit of delirium tremens, for thereby he manifests no *animus revocandi;* the Probate Court treats the testament as merely lost, for, as Lord Justice James once said, "All the destroying in the world will not revoke a will, nor all the intention in the world without destroying" (Wills Act, 1837, sec. 20). An insurance company may deny that the assured was in fact "sober and temperate in his habits," as affirmed in the declaration which led to his life, sickness, or accident policy (Thomson *v.* Weems, 1884, 9 A. C. 671, H. L. Sc.), or the company may assert that the present claim arose directly as a result of his wilful intemperance, as where he suffers from piles, hæmatemesis, ascites, neuritis, or the effects of an accident. A wrong-doer may seek to excuse some minor, if expensive, indiscretion, as that he spoke the truth in drink, or that he was guilty of some professional negligence in act, sufferance, or default; the law, however, declares *qui peccat ebrius, luat sobrius,* and to that extent holds a man legally responsible for his moral irresponsibility. A charge of "grave misconduct" may be laid at the door of a public official addicted to the abuse of "drink," usually after considerable anxiety on the part of responsible superiors and committees associated with the inevitable disorganisation of subordinates; or the guilty official may be discharged summarily—a proceeding which may lead forthwith to an action based upon alleged wrongful dismissal, and also possibly to an action for defamation of character and consequent pecuniary loss (Battersea *v.* Martley Guardians, Worcester Spring Assizes, 1904). The culprit's private medical man seldom affords much aid; usually he certifies vaguely: "neuralgia and gastric catarrh."

3. If a man's life ends in "unnatural death" from excessive "drinking," that fact should be certified and duly reported to the coroner, though this functionary comparatively seldom hears of such cases if the Registrar-General's returns of "cirrhosis of the liver" are numerically correct. The inquest-jury should include

this cause of death in their verdict if it is evidenced by clinical and pathological conditions. It is *felo de se* for a man to slay himself while drunk. In 1880 a man was convicted on a charge of manslaughter, it being proved that he had plied with spirits his not unwilling mistress until she died—"pickled in drink" (R. *v.* Paine, 91 Cent C.C. 537).

When a reply is sought to the inquiry: What conditions constitute drunkenness? the same difficulty is met as when it is desired to fix at what stage of mental derangement lunacy is an effectual forensic plea: each state must be subjected to full clinical tests, the possibility of malingering being remembered continually. The definition of drunkenness will vary with circumstances: intrinsically, with the progressive degree of the vice exhibited, from the disorderly hilarity of one who can take good care of himself while performing such acts as have become to him mere mechanical routine, through the stage at which "his brains" have been "taken away"—his memory and judgment being abolished, down to the condition of the man who, trusting in a generous Providence, cannot stand or walk or even lie; extrinsically, with moral and social environments, for the standard by which sobriety would be tested in a prohibition village where a drunkard is conspicuous by his presence would be an antithesis to the criterion applied locally in a city slum where the abstainer is conspicuous by his absence, where, as Mr. Justice Day said, "The quickest way out of Manchester is to get drunk," and where the inebriate has not far to seek his favourite public-house, which is generally, like the dying Oliver Goldsmith's desired doctor, the nearest.

The tokens of the effects of alcoholic excess upon the two sexes, whether acute or chronic, whether on mind or on body, differ, perhaps because the actual beverages and the habits of drinking are different among men and among women. In considering a calculus for drunkenness, the measurable quantity of intoxicant imbibed must be correlated strictly with the indefinite individual quality of the physical health of the subject and especially that of his bathed brain tissues. Lord Bowen affirmed, "The state of a man's mind at a given time is as much a question of fact as the state of his digestion": but in 1731, before psychophysical philosophy was dreamed of, a learned Master of the Rolls (Sir Joseph Jekyll) gave an historic ruling, "Neither will this Court measure the size of people's understandings or capacities." It is not uncommon for men to hear with surprise that they have been found drunk after a small dose of "a strange drink," or even after a usual potation.

To three classes of practical men the medico-legal tests of drunkenness are especially important:

1. A publican at his peril allows a drunken man, including of course himself, to be served or even to be on his licensed pre-

mises; he and his servants should be able to tell if and when a would-be patron has imbibed not wisely but too well (Cundy *v.* Le Cocq., 1884, 51 L. T. R. 265). Many men are "scandalously overserved with drink," as was Samuel Pepys at Cambridge. Magistrates from time to time comment upon the social benefit which certainly would result from the more frequent application of the penal powers thus committed to them, for the majority of "drunks" must leave the public-house in an intoxicated condition. In 1618, in Dalton's *Country Justice*, a quaint test is given: "Where the same Legs which carry a Man into the House cannot bring him out again, it is a sufficient Sign of Drunkenness."

2. The police (and certain other public servants) recognise "drunks" by popular rules of thumb, added frequently to witnessing an unsteady egress from a public-house. *Quieta non movere* is their common practice. Otherwise, as tyros they have been coached sufficiently in the cardinal canon of amateur "first aid"; when in the slightest doubt as to the condition of a man they have apprehended, shifting their responsibility they "send for a doctor!" Indeed, when dealing with well-known soakers they occasionally refuse to act upon their own impressions.

3. The medical man is the final referee. The police surgeon sees the "drunk" after some delay, and may be able to certify nothing more than "recovering from the effects of alcohol"; clinical facts of importance could be collected if such cases were put at once under medical supervision. The doctor applies scientific tests to the police suspicions. In wisdom he will give the suspect the benefit of a doubt, and tentatively treat his patient as with a serious disorder, unless and until its fleeting nature is demonstrated by a speedy recovery, for an injury may be masked or complicated by the subsequent dosage of the unfortunate man with "a stimulant," administered by would-be friends from whom he should have been saved. The logical differentiation of the condition of alcoholic intoxication has become the more difficult as it is increasingly recognised that many forms of mental facility, involving abnormalities in the physiology of responsibility, are directly dependent upon the presence of definite poison in the circulating blood; to that extent such mental aberrations are concomitant incidents of physical disease, for the brain is more than an organ—it is part of an organism. The recent or remote clinical history of "a drunken, riotous, quarrelsome, or disorderly person" may dissociate him from sufferers afflicted with nervous diseases, such as the stages precedent to mania and febrile delirium (other than *mania a potu*), attacks of hystero-epilepsy and post-epileptic automatism, or *tabes dorsalis* and general paralysis of the insane, *megalomania*. With the unconscious, insensible "dead drunk" the incautious may confound those comatose from

the student's mnemonic group "A.E.I.O.U." and a few rarer conditions.

> "They cannot with their reeling trunks keep pace,
> The tongue trips, mind fails, eyes stand full of water,
> Noise, hiccough, brawls and quarrels follow after."

Such is the classical description of a drunken man by the observant Lucretius, B.C. 60.

Omitting the special characteristics of the dipsomaniac, the chronic inebriate, and the victim of delirium tremens, it may be well to enumerate the common clinical tests applied to the normal "drunk" in the pre-comatose stage. There is no absolute neuropathological sign which may be relied upon; the drunkard is a bad clinical witness, and although "the ear interprets to the eye," it is a sound moral policy never to argue with a drunken man. Prejudiced by the police call, the man's general appearance (with slight ptosis), his irritative demeanour, and the odour of his breath, the medical examiner receives from his patient either no reply to his inquiries or a foolish answer to his charge, perhaps an accusing excuse. If garrulous, a fatuous incoherence may mark the drunkard's clipped speech; the one-sided conversation, however, is based mainly on an emphatic denial of his obvious condition—just as the insane proclaims his sanity. The direction of his argument probably will be obscure. He will be the victim of suspicions and of irresponsible subjective errors—it is stated that the drunken sailor sees "the sea serpent." While effusively welcoming genial advances, the tipsy man will brook no contradiction nor reproach; this is a practical point of management applied by the police, especially when dealing with female inebriates. His swaying movements and strivings to attain some stable support demonstrate muscular inco-ordination, whether at comparative rest or while attempting to walk; these signs will be accentuated by directing such complicated manœuvres such as toeing a chalk-line, picking up a coin, standing on one leg with the eyes closed—then possibly he will explainingly complain of "a bad ankle." In the more advanced comatose stages, he is unable to stir a muscle, not even the thumbs are moved; unless roused by a violent painful sensation, he rests in peace. More detailed tests of drunkenness in its earlier stages and those which may be produced in Court, if necessary, as "real" evidence, are based upon the shaking hand, the unruly tongue, and the temporarily blotted out memory. The humoured offender may be directed to sign his name, to record his address and the date, to repeat some "hard words"; even if this performance does not lead to great wavering, confusion, and muddle, it will be, at least, in marked contrast to what he writes and speaks normally with steady hand and tongue and a right mind; the writings may be attached to the official medical report as an exhibit. Amnesia is usually marked in those who have deeply dipped their lips into this tributary to the waters of Lethe. The time-sense is obliterated during intoxication, as in other forms of anæsthetisation; statements made as to the hour of the night must be accepted with reservation when they come out of a drunken mouth; this fact long has been the basis of a stock jest among comic editors. Upon recovery from intoxication, depositions then made and words then written and produced as evidence may be denied, because forgotten; while drunk the nature of an oath will not be appreciated (Mansell *v.* The Queen, 1857, 27 L. J., M. C. 4; *cf.* R. *v.* Spilsbury, 1835, 7 C. & P. 187). Moral: never take a pledge, for good or for ill, from a man "in liquor."

Indeed! Indeed! Repentance oft before
I swore—but was I sober when I swore?

These symptoms and signs of the drunken state are regrettably unprecise and savour of descriptive platitudes. Two additional clinical signs are commonly present—(1) The body temperature registers subnormally; (2) an impaired pupillary light reflex usually may be noted (von Gudden).

Some questions of law and of clinical jurisprudence may be considered:

At present, the Habitual Drunkards Act and kindred enactments only embrace the victims of "intemperate drinking of intoxicating liquors," which beverages by reference to previous legislation (Licensing Act, 1872, sec. 74) must be interpreted as including solely "any fermented, distilled, or spirituous liquor" which is exciseable, and thus not a "sedative, narcotic, or stimulant drug or preparation," such as when persistently taken leads to a general malady characterised by a debasement of the moral sense—*narcomania.*

The Lunacy Laws have but a very limited application to narcomaniacs as such; this led to the special legislation for the restriction of the personal liberty of chronic alcoholic inebriates. In 1802 an unique Committee of Lunacy was appointed to consider the case of a confirmed inebriate (Ridgeway *v.* Darwin, 7 Ves. 404). Only where "drink" educates a latent true mental insanity, or otherwise produces a definite type of alienation, either original or ancestral, are the Lunacy Laws operative. The jury's recommendation to mercy of so many prisoners convicted upon grave indictments, whose sins were committed while intoxicated, is often a recognition of an inherent weak-mindedness, little short of insanity; the logical verdict, if not reduced, is at least followed by a mitigated punishment (R. *v.* Dompig, 1904, *The Times*, Jan. 14). Indeed, occasionally the lawyer's test of lunacy, "Did he know he was doing wrong?" has been applied vainly to cases of admittedly drunken insanity (other than delirium tremens), which though temporary in nature is voluntarily produced (R. *v.* Baines, 1886, *The Times*, Jan. 25).

Attacks of *delirium* are not provided for by the Lunacy Laws, nevertheless acts, otherwise criminal, perpetrated by one in a fit of delirium tremens will be regarded in Court as the deeds of one suffering from temporary insanity, incidental dementia. This is a practical point bearing upon the clinical management of patients, which is noteworthy to medical men. It would be both impolitic and illegal to certify and confine such patients as lunatic; impolitic, as the act would be resented bitterly by the patient upon recovery, and, further, unless protected by the written request of near relatives, an action at law might result (Scott *v.* Wakem, 1862, 3 F. & F. 328; Symm *v.* Fraser, 1863, 3 F. & F. 859). In practice, however, delirious patients of slender means are detained, often forcibly, in a parochial infirmary; such delirium tremens cases may develop into *mania a potu* needing asylum treatment. It would be wise to label cases of delirium tremens exhibiting great violence during the mental deviation as *mania a potu*, even when they recover within the statutory fortnight during which temporary lunatics may be detained.

The general legal effects of intoxication when pleaded in civil and in criminal courts are, in conclusion:

In non-criminal law and in procedure the Court only notices actual drunkenness as a ground of relief where undue advantage of the condition may have been taken; chronic inebriety is ignored. A tort, a wrong, is not excused by proof of intoxication. A will may be upset from lack of a true *animus testandi*. A contract may be avoided for there was no true *aggregatio mentium*.

In criminal law, in some cases the mere fact of being drunk is a sufficient offence, and if it happens repeatedly the offender may be committed to a retreat. An indictable offence is not excused by proof of contemporary intoxication (R. *v.* Davis, 1885, 14 Cox C.C. 563), but this rule is probed by several definite exceptions:

1. Where pathological delirium, a secondary result of the drinking, was present the man will be regarded as having been mad. Lawyers seem to imagine that delirium tremens is always associated with violent outbreaks. If "drinking" produces true lunacy, the usual rules apply.

2. It is a defence if the otherwise criminal act was produced by error (R. *v.* Evans, 1889, Leicester Winter Assizes) or by the private trick or design of another, as with the "hocussing" of olden time. To-day there are pertinent medico-legal bearings in the sale of grossly adulterated and substituted intoxicating drinks: thus, how far should a drunken man be held responsible for his misdeeds, if chemical analysis proved that when the culprit had demanded a specified pure spirit, the barmaid, that modern Circe, had given him "fusel fire-water" or "doctored devil in solution," which forthwith had maddened him?

3. The purely legal conception of "intent" and "consent" do not concern this discussion, but where an indictment alleges the

presence of an intention, that is, of a positive expectation, the effect of alcoholic intoxication upon the mental operations of the accused may receive favourable consideration; he could not have *intended* to commit that statutory crime if he was drunk at the time, although he may have done an obnoxious deed (R. *v.* Cruse, 1838, 8 C. & P. 546). Should the accused have fortified an evil premeditation with "Dutch courage," his introductory conduct may be suggestive; further, it has been affirmed that a man may have "a drunken intention" (R. *v.* Doherty, 1887, 16 Cox C.C. 306). The consent of a drunken victim may be disputed (Rape: R. *v.* Camplin, 1845, 1 C. & K. 746; *cf.* Bigamy: R. *v.* Charlton, 1849, Cent C.C. 797).

The law will not allow that it is a valid excuse to plead that a man suffers from an ill that flesh is heir to, so that upon him in person are visited the iniquities of his great-grandparents. The common law considers legal duty to be coextensive with moral obligation, as in resisting evil impulses (R. *v.* Instan, 1893, 62 L. J., M. C. 86).

Robert Louis Stevenson did not bequeath to humanity the constituents of the prescription by which Mr. Hyde was reconverted into Dr. Jekyll; even had he been so philanthropic, the State, at present, would not allow dosage by that or by a similar specific to be administered compulsorily to alcoholics—to right them and keep them right.

Note.—In 1903, 718 separation orders were granted in England and Wales on the ground of habitual drunkenness, namely, 437 to husbands, 281 to wives.

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SLIGHT ERRORS OF REFRACTION AND THEIR INFLUENCE ON THE NERVOUS SYSTEM.[1]

By C. Ernest Pronger, F.R.C.S., *Ophthalmic Surgeon to the Harrogate Infirmary.*

Two years ago, I read at a meeting of this Society a paper on the influence of slight errors of refraction as a starting-point of many functional nerve troubles, quite apart from any impairment of vision or local discomfort to suggest eye trouble. I mentioned some of the commoner remote effects of eye strain, such as migraine, and the various forms of headache, insomnia, vertigo, depression, irritability, choreic movements of facial muscles, and various troubles usually treated as disorders of the liver or stomach.

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[1] A paper read before the Harrogate Medical Society, 30th March 1905.

Having referred briefly to epilepsy, *petit mal*, chorea, and hysteria, the question was submitted for your observation and consideration as to whether the real starting-point of those various symptoms to which the name neurasthenia has been given might not be slight error of refraction : that the soil being prepared as it were by its insidious harmful effects, the supervention of shock or any one or more of the long list of causes of neurasthenia which have been suggested might not bring about the crisis or breakdown which at first sight would be looked upon as the beginning of the condition of neurasthenia.

My paper, read and printed in March 1903, was followed in August by a long article in the *Lancet* on a book on " Biographic Clinics," brought out by Gould of Philadelphia, and it was very pleasing to me to find that many of the main points advocated in that book were identically the same as in my own paper.

From the dates given in some of the cases in my paper, it will be seen that this special subject has engaged my careful attention for more than ten years (my first paper on this subject was in 1895), and Gould, in a letter recently received from him, tells me he has long been urging this subject upon the profession.

Now, when two men working upon the same lines, and quite independently, for some years, arrive at practically the same results, it would seem probable that their conclusions would be fairly accurate. More especially should it be the case in regard to these slight errors of refraction, seeing that many of the remote effects of the higher degrees have been recognised and recorded.

In continuation of my paper of two years ago, I want to say something about neurasthenia, if I may venture to discuss a subject which has hitherto been generally looked upon as quite outside my department, and belonging almost exclusively to the province of medicine.

Now, if we consider for a moment the many suggested causes of neurasthenia, and let us take for example a very common one, worry, we are at once struck by the fact that out of large numbers subject to this influence only one here and there actually breaks down under it. Is it that the worries and anxieties of these few are so much greater than those of the others, or is it that the nervous system is less stable, that there is some predisposing cause which renders it less able to resist the tax put upon it ?

We might go further, for in many cases of neurasthenia one of the earliest symptoms observed is a disposition to worry about the merest trifles, and in such cases, if really great worries or anxieties were to crop up, a breakdown would readily occur. Is the worrying cause or effect?

It behoves us, therefore, to search for such a cause as would be likely to so affect the nervous system as to predispose it to break down under the influences which have been suggested as the causes of neurasthenia.

We have such a cause in refractive error, and this is not merely a theoretical suggestion on my part, but the conviction which has resulted from actual observation of large numbers of cases during many years, and the careful following up of the results of treatment. A rather striking instance occurs to me which illustrates the point I wish to impress upon you. A few years ago I prescribed glasses for a medical man well known to you all, for the correction of astigmatism, in spite of the fact that up to that time he had considered that his eyes were normal; in fact they had been tested, and he had been told so. Some time after this he had occasion to go over to Ireland, as he had frequently done before, but had always dreaded the journey, as he was invariably violently sick. On his return he came to me and told me that he had had a very rough passage both ways, but he had not been in the least sea-sick, and that he attributed this to the glasses. In this particular instance the motion of the sea was not by itself sufficient to upset him, the additional influence of that slight error of refraction having been removed. The scepticism with which this incident would be received by many, and the ready explanation given that it was merely a coincidence, suggest that I should pursue the case a little further. The same patient was also a great sufferer from train-sickness, a not uncommon result of astigmatism. With his glasses on he can now take a long journey without inconvenience. Here, again, the train journey would be the obvious cause of his trouble, the more important but less apparent cause being slight error of refraction. It seems to me not unreasonable to suppose that the same thing might happen in other functional nervous derangements, and why not in some of those conditions called neurasthenia?

I will now take two cases of neurasthenia having many points in common in which this contention appears to be borne out.

Case I.—J. L. B., æt. 51, married, consulted me on 8th May 1903. Led an outdoor life, learning farming until 24 years of age, and enjoyed good health. He then began to study for the ministry, but his studies were much hampered by severe headaches. He persevered, became a minister, and eventually occupied a position of great responsibility, and which involved much hard work and anxiety. He began to suffer severely from insomnia, vertigo, and extreme depression, and finally his nervous system broke down completely. He was treated as these cases usually are—first, by his family doctor, and afterwards by another, both personal friends, who took the greatest interest in his case. He also saw an ophthalmic surgeon in town, who prescribed glasses which might be used for reading, but the patient seldom used them, as he could see well enough both for distance and near work for all visual purposes.

A London consultant then advised a prolonged stay in Switzerland, and this was carried out, but with a most disappointing result. A course of treatment at Woodhall Spa was next tried, but, being no better, he was afterwards sent to Harrogate. The doctor whom he consulted sent him at once to me, and abstained from any other treatment, as he wished to see if spectacles would have any effect. The patient told me he could see quite well, and did not believe the eyes could have anything to do with it, but was willing to try anything, although he quite despaired of ever being any better. Six months later he wrote: "After ten weeks of hard and anxious work, I am still holding my own. This is such a joy to me that I am preaching this new treatment wherever I go. After the little confusion which the glasses caused —the perspective of everything being altered—I began to improve in health, and for six months have never had any set back. Refreshing sleep became habitual after a long period of insomnia, during which I was quite a wreck, and with sleep strength began to return, and life, which had been a burden, is now a delight."

The next case:—

Case 2.—J. M., married, æt. 53, consulted me in August 1902. He had suffered much in the same way as the last—occasional severe headaches, great mental depression, and insomnia. He had been obliged to give up his occupation (a shipbuilder), and had been treated by twelve different medical men before consulting the one who sent him to me. He did not then believe that glasses could be of any use, but consented to wear them. Having no faith in them, he consulted two nerve specialists, one of whom prescribed the common remedy, a prolonged stay in Switzerland. His letter, received on 2nd January 1905, shows that he has grasped the very point which I wish you to more fully recognise. He writes: "That his health is vastly improved since first consulting me—that after taking to glasses he had, as the result of consulting two nerve specialists, carried out a treatment (prolonged stay in Switzerland) which had not been previously tried—that his first long journey, after taking to glasses, was accomplished without a headache (although worn and tired in other respects), a thing which had not happened for many years, and showing that he was getting benefit—that he is fully of opinion that had he not worn glasses the treatment would not have had such good and permanent effect."

These two cases suggest that however helpful the change of air and scene may be in these cases, that they are not enough by themselves to cure if there be a slight uncorrected error of refraction in the background, but first correct this and the combination will effect the cure.

In my experience, error of refraction is almost invariably present in neurasthenia, and I do not mean the infinitesimal amount which physiologists tell us is present in all eyes, but an appreciable quantity such as can be detected and corrected by glasses, a quarter of a dioptre upwards. I have often wondered how it was that this association had not been observed, or, if so, that greater importance had not been attached to it. One reason now occurs to me. Having read a long and able article on neurasthenia in the journal, I was struck by the fact that refractive errors were not mentioned, and asked the author what his experience had been in this direction. He told me that the cases he sent to the ophthalmic surgeon were nearly always returned as "normal, or practically so." The last two words, "practically so," suggest a great deal. The ophthalmic surgeon (and I speak generally, not of individuals) finds the patient can see $\frac{6}{6}$ with each eye, and can read Jj without difficulty, and makes no complaint of aching or of trouble of any kind connected with the eyes; even headaches may not be a symptom. He, not having had a large experience as a physician, or knowing much of neurasthenia, is satisfied with the patient from a visual point of view, and reports "normal, or practically so." He may or may not have observed slight astigmatism, but if so, why saddle a patient with spectacles under such conditions?

It is necessary that both the physician and the oculist should understand the principle which I suggest to you if good is to result.

The following is a case in point:—

Case 3.—A physician in a neighbouring town suspected the presence of astigmatism in a boy of 14 suffering from nerve troubles, and sent him to an ophthalmic surgeon, but the report came back as normal. Not being satisfied, the physician asked me to examine the boy, and I found a quarter of a dioptre of hypermetropic astigmatism in each eye, axis oblique, and ordered glasses to be worn constantly. The boy got quite well, and kept so for twelve months, when the mother brought him to me again, saying the symptoms had suddenly all come back again. As the result of a fall, one of the lenses had dropped out of his spectacles, and had been replaced, but with the axis in the opposite direction to that prescribed.

Some of you have said that my results are due to suggestion; and how well this case would have fitted in with that view but for that little accident. One cannot, of course, say what this boy's future might be if the astigmatism were uncorrected, but it is quite possible that it might be not unlike that of a patient whom I saw in August last whose error of refraction was very similar. This patient describes his experiences in somewhat emphatic language in a letter four months after his visit to me.

Case 4.—He says: "Personally I can say that life has been much more enjoyable since I visited you. Previously I was intensely irritable, and frequently 'cursed myself in my despair.' Latterly I have arrived home from business with a slight surplus of energy and power of concentration which previously was a rare thing for me to do. I have changed my residence frequently, fled to poultry-farming once, and generally behaved in a manner which caused my friends to have serious doubts regarding the stability of my mental gear. I now begin to appreciate Carlyle on 'permanency,' and can form a plan of life where previously chaos reigned. It is impossible, of course, to say or conceive what might have been, but my own personal conviction is that I should have been less of an ass if my eyes had not troubled me so persistently. My internal and secret profanity must have at times satiated the devil himself, assuming such a personage to still exist. I sincerely hope that this happier frame of mind will become chronic, and that you may long be spared to alleviate the suffering which can only be understood by those who have had to endure it for years as I have done. I have endeavoured to represent to you as nearly as possible my actual feelings on this subject, and trust you will excuse my departure from conventional expressions in my effort to truthfully convey my ideas."

One meets with constant variety in the cases sent to one as neurasthenia, and it is sometimes very difficult to tell how much is due to functional disturbances, and whether there may not be some organic lesion present.

Case 5.—A patient was sent to me in May of last year, in whom no organic lesions had been detected, although she had been seen by several medical men, and yet that patient died in the following November, and the autopsy revealed chronic Bright's disease. This patient derived very great benefit from the use of glasses in the relief of her neurasthenic symptoms, and the case is instructive in that it shows how necessary it is to bear in mind the possibility of refractive error being present as a complication in cases of organic disease. Had the Bright's disease been recognised, her neurasthenic symptoms would no doubt have been attributed to that, and the patient would not have been sent to me.

Especially would I suggest this point to you in connection with gout, for when once that word has been used there is a great disposition, both on the part of doctors and patients, to attribute all symptoms to that special cause, and but for this complication being overlooked, many cases of headaches, insomnia, etc., might be speedily relieved. Perhaps it more frequently happens that serious brain or other lesions are supposed to exist, in which the results show that the troubles are entirely functional. The following is an illustration:—

Case 6.—J. S., æt. 44, had suffered for some years from nervousness, dizziness, and headaches, and for the last six months had been obliged to give up his occupation. From the severity of his symptoms generally, his medical attendant wrote that he feared some serious brain trouble. The doctor who saw the case here asked me to examine him, and I prescribed glasses for constant use. The medical attendant at home was at first somewhat annoyed, as he had already sent the patient to an oculist, who had found slight astigmatism, but had considered it so slight as to be of no special importance. The patient got rapidly better, returned to his occupation, and has since been to Harrogate for a holiday, but feels that he does not now require any treatment. This case shows how dangerous it is to ignore slight errors of refraction, and how misleading it may be to the physician.

It is always interesting to watch the effects of treatment in cases in which the conditions are similar, and in that respect the three following instances, Cases 7, 8, and 9, are of use.

In the spring of 1903 three patients came under observation, all married, all about the same age, similar conditions of life; one being a solicitor, one a doctor, and one a manufacturer. Similar symptoms—headaches, irritability, depression, and feeling unfit to continue the ordinary duties of daily life. They had all tried the usual remedies advocated in these cases, special attention having been paid to the functions of the liver. In spite of treatment, they had all arrived at that stage in which something must be done, as they could not go on as they were. In all three cases a sea voyage had been prescribed. In all the cases the vision was quite good, and there was no complaint of any kind directly connected with the eyes. The doctor came to see me, and I ordered glasses, for slight astigmatism, to be worn constantly, and he started for a voyage. The solicitor also went by the same ship, but knew nothing of his fellow-passenger, and he did not consult me before leaving.

The manufacturer, after hearing my opinion of his case, decided not to take the voyage, but returned to his duties.

The doctor tells me that the long rest and change of the voyage undoubtedly did him a great deal of good, and he also noticed that he could read in the train without headache since wearing the glasses, which he could not do previously. I, too, have observed that although the glasses are not in any way a necessity, from a visual point of view, that he is now never seen without them, in fact on three occasions he tells me that he has got into bed with them on. The manufacturer has taken no voyage, but steadily improved in health, and in six weeks reported himself as much better. The improvement continued, and I saw him recently in his usual good health, and enjoying life again as of old. He was rather indignant at being sent to me, as he had been told previously that his eyes were normal, but he tells me he now wears his glasses constantly, and has done so ever since I first saw him. The solicitor returned from the voyage greatly disappointed, as he was little, if any, better. A few weeks later, being as bad as ever, he consulted me, and I prescribed glasses for constant use. In a letter received six months later, his wife writes: "My husband is now very well indeed," the "very well" being underlined.

It is my lot to frequently see instances in which the whole career of an individual has been blighted and changed, as the result of a cause which might have been easily remedied had it been detected and its importance recognised. This nearly happened to the writer of the following letter, who was considering the question of giving up his post when he was advised to consult me. This advice was a surprise to him, as he had always attributed his symptoms to digestive disturbances, and had had no discomfort in the eyes, and was not conscious of any defect. He wrote me, four months after his visit, as follows:—

Case 10.—"I must tell you of the great benefit I have received from the constant use of the glasses you prescribed for me on 1st July last (1903). I had suffered from headaches for many years, the pain being chiefly frontal, and at times so acute that the whole of my head felt as though it had been burnt. About three years ago I was subjected to a very peculiar attack: a sudden dizziness overtook me when just awaking from sleep, and I fell into an unconscious condition, which lasted for about fifteen minutes. On recovering, I was left with one of those violent headaches. These attacks I suffered from repeatedly, and when up and about it required a very great effort to prevent one's self from becoming unconscious. I saw a London specialist, who advised the use of bromides, but with no definite result. Towards the end of June last, Dr. —— advised me to consult you, and I have worn the glasses ordered ever since. About ten days after this I had another of those attacks, perhaps the most violent I have had, this occurring early in the afternoon. Previous to this attack I had occasionally discarded my glasses, but since then I am never without them. Four months have now elapsed, and, so far as these attacks are concerned, there seems no probability of their return. Before my visit to you, lapses of memory were almost a daily occurrence, now they are practically unknown, and when in evidence are but momentary. The periods of dizziness have quite disappeared. I feel better in health, my brain is clearer, the headaches have never returned since I wore the glasses, and the state of depression into which I was sinking has entirely passed away."

Were I to assert that error of refraction is responsible for a large proportion of the suicides occurring daily, and that it is a potent factor as a cause of insanity, that assertion would probably be held up to ridicule and dismissed as absurd. Many things appear at first sight improbable, but on reflection much less so, and I will ask you to reflect for a few minutes on this subject. When you have seen, as I have done, in a very large number of cases, the effect of uncorrected errors of refraction on the nervous system, you will be struck by the great frequency of the occurrence of such symptoms as insomnia, great irritability, extreme depression, impaired memory, difficulty of concentration of thought, lack of self-confidence, apprehension, weariness and exhaustion, and a general want of stability of the nervous system. I have tried to illustrate error of refraction as the cause, and the correction of it the cure, for these troubles. How often the patients have told me they have been on the verge of suicide, and have used the expression that they were afraid they were going out of their minds. It is quite conceivable that suicide would be more likely to occur in those who had been for a long time enduring the mental torture which results from the conditions I have enumerated and which has rendered life a burden. I will read one or two extracts from actual reports of suicide.

"The deceased had been very low-spirited, and had been under medical treatment for six months; she complained of pains in the head." Another case: "The deceased had been afflicted with nervous debility about four years." Again: "The deceased had suffered latterly from insomnia, and had been much depressed. Again: "The deceased had suffered from influenza, later insomnia, and had been taking narcotics to induce sleep."

If alongside these extracts you read some of the cases I have already quoted, or the following letter, it certainly provides suggestive material for consideration.

The writer says: "I must tell you how grateful I am for what you have done for me. I should have written long ago, but wished to give the glasses a thorough test, and to see if the attacks of terrible depression returned which I have suffered from previous to seeing you. I am glad now to tell you I find the glasses a great comfort, and have never once had a return of these particular attacks of depression which had hitherto made life a misery to me."

Many of you will be able to recall instances of sufferers such as I have described flying to narcotics or alcohol for temporary relief from their distress, and no doubt this leads to much of the secret drinking which prevails to so great an extent. In view of the large number of suicides attributed to alcoholic excess, ought we not to look upon intemperance as a disease, and always try to find out the circumstances attendant upon its commencement, as to whether or not it might be due to a remediable cause? We should often be able to trace it to conditions of suffering such as I have described, and on examining the patient, the presence or absence of error of refraction would be a most important point.

Errors of refraction are largely on the increase, and for two reasons—first, as a result of the great demands made upon very young children by the educational system of the present day, and, secondly, from the fact that they are hereditary. Insanity is also largely on the increase, not only numerically, but proportionately. May there not be a connecting link between these two facts? Much that I have said in regard to suicide might also be applied to the question of insanity. To those of you who have had much experience of cases similar to those I have represented, it would not, I think, require a great stretch of the imagination to suppose that some of them might lose their mental balance and become insane, or gradually drift into a condition of melancholia. Insanity is sometimes attributed to shock, but it would be an alarming thought to feel that any one of us, if exposed to a severe shock, might suddenly become insane. We could more readily understand such an effect being produced in one who has been a long sufferer from neurasthenia, and this reminds me of a case sent to me for neurasthenia. The doctor told me she had on two occasions been out of her mind, the cause being attributed to shock at the loss of her sister, who had suddenly disappeared when on board ship and had not been seen since. This patient had for a long time suffered from neurasthenic symptoms, and had always been of a highly strung, nervous temperament. She had slight astigmatism in both eyes, but of different degree. She had previously been sent to two eminent ophthalmic surgeons, but they had apparently not attached sufficient importance to the refractive error to insist upon its constant correction. Again, what a very important position is always assigned to alcohol in the list of causes of insanity! If alcohol by itself were the cause of insanity, we should expect even a larger number of cases to result, seeing the vast extent of its use and abuse, and also more frequent and more rapid cure on its complete withdrawal. In a typhoid epidemic you would not be content to trace the cause to the milk only, but would pursue your investigations to the source of contamination. Would it not be more reasonable in this case also to investigate the condition of the nervous system which led up to the excessive use of alcohol, and this would often take us back to that starting-point which would suggest a very careful examination of the patient's eyes. The truly distressing condition of some of these neurasthenic cases suggests strongly to my mind, that as there so frequently is a complete nervous breakdown, so, if unrelieved, there might be eventually a mental breakdown. I cannot help thinking that a thorough investigation of the previous history, and a very careful examination of the refraction, would result in some of the forms of insanity being traced back to these early manifestations of nerve troubles which have been shown to be due to eye-strain.

We have heard lately of pre-cancerous conditions, and my suggestion is that we have also a premonitory stage in some of the forms of mental breakdown, and that it is during this stage that so much might be done to avert disaster.

The following is a suggestive and instructive case in regard to this point:—

Case 11.—Mrs. C., æt. 36, extremely neurotic, had suffered intensely in her head for some years, especially the last four years. Not so much actual pain, but distressing sensations, and a constant dread of going out of her mind. Great depression and nervousness, and could not be prevailed upon to go out by herself. Could not go to a theatre without much suffering after it, and in fact was practically debarred from all social functions, and quite unfit to attend to domestic duties. She had been variously and greatly treated; had changed her place of abode several times; had had a course of Weir-Mitchell treatment; she had consulted five different medical men in Harrogate, a consultant in Leeds, and nearly all the doctors in Scarborough. She could see quite well without glasses, but promised to wear them, as she would do anything to get better. She persevered, and very gradually but very surely improvement took place. In eighteen months after I first saw her she was much better in every way, came over from Scarborough unattended by her husband, could go to theatres and attend to domestic matters, and life was now to her worth living. I have recently had a further report from her husband, who writes: "When my wife first called upon you she was in such a state of nervous prostration that she was totally unfit to perform or go through the ordinary duties of life, and I feel confident that the wearing of spectacles enabled her to battle against her feelings and saved her from a mental breakdown. For the past two years she has never been without her glasses, and now her health is nearly restored. May she now leave off the glasses out of doors?"

This was a very long-standing and severe case, and some months elapsed before very marked improvement was observed. Bearing in mind her condition when I first saw her, I can only endorse the opinion expressed in her husband's letter.

I would suggest that in all cases of neurasthenia in which error of refraction is present, that it should become the routine practice to have that error corrected. If this be skilfully done, and the correction perseveringly worn by the patient, I am quite convinced that those measures which may be prescribed by the physician for the restoration of nerve tone will be not only more rapidly successful but more permanently so.

I must ask you to receive these remarks as far as possible with an open mind, not with the idea of criticising my feeble attempts at the elucidation of such intricate and difficult problems, but rather to try to find in them some hints, some suggestions, to help you in your efforts to throw more light upon these obscure subjects.

A NOTE ON THE AËRIAL CONVECTION OF SMALLPOX.

By CLAUDE B. KER, M.D., F.R.C.P.Ed., *Medical Superintendent of Edinburgh City Hospital.*

THE influence exercised by smallpox hospitals on the surrounding population has been a subject of discussion for more than twenty years. In 1881, Power demonstrated the influence of the hospital at Fulham on the population dwelling within a mile radius, and since then other observers have noticed the greater prevalence of smallpox in the neighbourhood of smallpox hospitals during different epidemics. While this hospital "influence" may be said to be generally recognised, there are two distinct views regarding its nature. Power held that the infection is carried from the hospital by the air; and this is the view which is favoured by the English Local Government Board. Others consider that defective administration on the part of the hospital authorities is responsible for the undue prevalence of the disease in the immediate neighbourhood; and it is beyond all question that some of the hospitals, the unfavourable influence of which has been quoted, were by no means perfectly administered. In the discussions on this subject, each party has been able to produce a formidable array of sanitary experts, and on the occasions on which the question has come into a court of law, the decision has so far been that the supporters of the aërial convection theory have failed to prove their case.

All the more valuable and interesting, therefore, is the very careful study made of the whole question by Dr. G. S. Buchanan in the form of a paper read before the Epidemiological Society. The experience of London, Manchester, Glasgow, Liverpool, and Gateshead during recent outbreaks is fully discussed, and it may be at once admitted that a strong case in favour of the air theory is made out in the case of the smallpox ships on the Thames, in the case of the three Liverpool hospitals, and, most of all, as regards the experience of Gateshead. At Manchester little or no hospital influence was observed; and the evidence from Glasgow, though highly suggestive, does not appear in any way conclusive. Still, Dr. Buchanan's paper may be regarded as by far the strongest and most convincing argument in favour of aërial convection hitherto produced.

The experience of Edinburgh in the 1904 outbreak may nevertheless be of some interest. It will be remembered that the recommendations of the English Local Government Board require that a smallpox hospital should not have a population of 600 within half a mile, even if some of that population is in an ordinary fever hospital. Indeed, fever hospitals, poorhouses, and other institutions are particularly forbidden within the half-mile radius. Now, our smallpox temporary hospital at Colinton Mains stands wedged in, as it were, between the grounds of the permanent fever hospital and those of the Craiglockhart Poorhouse. During the year 1904 the average population of the first of these institutions was about 450, and of the second about 1000, and the main buildings of both are within the quarter-mile radius. Also within this radius is another public institution with a population of over 100, to take a low estimate. Within the half-mile radius stands the asylum at Craighouse, while, if the mile radius is considered, there is a population of 3000 in the Comiston Drive district, and 572 persons in the village of Slateford. A part of the village of Colinton, with its population of 782, stands just at this limit also. It may be said, therefore, that within a quarter of a mile of the hospital there is an average population of well over 1500; within a mile probably over 6000 persons.

Now, of this population within a mile it may at once be said that no cases occurred which could in any way be attributed to hospital influence. Three cases, it is true, occurred in the poorhouse, but two sickened within the incubation period of the disease shortly after their admission, and the third was quite satisfactorily explained. Moreover, there was just as much smallpox at the other City Poorhouse several miles away. One case occurred just three-quarters of a mile away, but the man in question had been in an infected area twelve days before he was taken ill. A few cases, in nearly every instance satisfactorily traced, occurred in Morningside just outside the mile radius. For the smallpox infection to reach them from the hospital it would have had to have passed harmlessly over the 1000 persons in the poorhouse, and then over the 3000 persons in the Comiston Drive district. It is therefore most unlikely they could be due to hospital influence.

The condition of vaccination in this population must, of course, be considered. In the City Hospital the staff is efficiently protected by revaccination, and the greater part of the patients are children protected more or less by vaccination in infancy. At first sight, therefore, it would appear that the immunity experienced by the hospital inmates means little or nothing. Curiously enough, however, the two pavilions which lie nearest the smallpox buildings contain a population which consists chiefly of adults, and there is no reason to believe that these had been recently, if ever, revaccinated. This is particularly the case with the erysipelas pavilion, the inmates of which were all adults, and of a class in which one does not expect to find many revaccinated persons. I must confess to having felt nervous about the safety of these patients. The pavilion is not 30 yards from the smallpox boundary fence, and is only 72 yards from the nearest occupied smallpox ward. But as it was impossible to carry out vaccination in an erysipelas ward, I had to leave them to take their chance, and, as has been said above, none took smallpox, in spite of the short distance which separated them from the smallpox wards. As regards the poorhouse, I understand that, with the exception of revaccinating the inmates of the ward in which smallpox occurred, no special precautions were taken to protect the bulk of the population.

The next point of interest is the average number of smallpox patients in hospital over a given period. This is of importance, as Dr. Buchanan lays stress on the fact that a sufficient concentration is necessary to produce aërial infection. From the middle of January to the middle of April the average daily number of smallpox patients under treatment was forty-seven, while if a period be taken from 1st February to 31st March the daily average was fifty-five patients. In the case of Glasgow and of one of the Liverpool hospitals a population of fifty was asserted to be sufficient to make hospital influence felt, so this number of patients must be regarded as affording a fair test.

And now the question which naturally presents itself is this: Is there any difference of administration in the Edinburgh Hospital from that of the other hospitals named which could possibly account for the immunity of the surrounding population? There are three points which suggest themselves as giving a possible explanation. First, no nurse in the smallpox hospital is ever allowed out under any circumstances whatsoever. A nurse is sent over from the fever hospital in her uniform, and with no outdoor or ordinary clothes. She understands she will remain there for six weeks at least. The grounds give ample opportunity for exercise and relaxation, and, so far from the service being regarded as a hardship, many nurses elected to remain for three months or more, and volunteers were always readily forthcoming. This circumstance means that one source at least of possible carriage of infection was entirely eliminated. Secondly, both the smallpox and fever hospitals enjoy a most remarkably natural isolation. In spite of the proximity of the poorhouse, there is no communication between the institutions, unless a very formidable quickset thorn hedge is scrambled over, and the distance by road is at least two miles. I believe none of the staff of the two buildings are even on speaking terms with each other, and, as a result, even if there was a leakage of infection from the smallpox hospital it could hardly affect the poorhouse staff. Again, though there is an entrance to the fever hospital from the west, it is never used by the staff, and communication between the hospital and the villages of Colinton and Slateford must be altogether exceptional. Thirdly, the windows of the superintendent's house rake the whole line of boundaries between the smallpox grounds and the fever hospital on the one hand and the poorhouse on the other. Efficient superintendence of the whole line of possible contact was thereby to a great extent secured, as if a smallpox convalescent was seen loitering too near the fence at any time of the day, a telephone message to the smallpox wards drew the attention of the nurses to the fact at once. I think I may claim that these advantages of situation and this method of nursing make the Edinburgh Smallpox Hospital a very fair test case in this controversy, as infection except by air is very improbable.

I am given to understand that Dr. Buchanan explains our immunity by the nature of the ground, considering that the Craiglockhart hill protected the neighbouring districts. This is not the case. It may have protected the village of Slateford and the population lying between that village and the hospital. It may even have protected Craighouse. But under no consideration could it have protected the 1000 persons in the poorhouse, nor, indeed, the greater part of the population of 3000 which lives beyond. On the contrary, if anything, it must have directed the prevailing south-west wind more directly upon the poorhouse buildings.

I have endeavoured in this brief note on the subject rather to state facts than attempt to draw conclusions. But one conclusion is, I think, self-evident. That is that the Local Government Board recommendations are of too hard and fast a character, and may almost be regarded as "vexatious." Particularly unwarrantable is the recommendation not to have a smallpox hospital near the permanent fever hospital. I am convinced that efficient administration of a smallpox hospital is much easier if it is worked with nurses of the permanent hospital staff, and not with a scratch set of women recruited anywhere, and if it is directly under the eye of the permanent official entrusted by the town with the care of the infected sick.

INSANITY.[1]

By John Macpherson, M.D., F.R.C.P.Ed., *Commissioner in Lunacy for Scotland.*

Lecture V.

In the second lecture I discussed the distribution of the neuroses throughout the various races of mankind, but the subject was necessarily curtailed for want of time and space. It would not, I believe, be a difficult task to prove that no race of men is free from very extensive affection by epilepsy or hysteria, or many other nervous affections, regarding which we have but an imperfect account. When we come to inquire into the similar prevalence of insanity, however, the evidence is much more negative, and although there is no race of men who are known to be free from it, yet, on the whole, travellers are in too many instances silent. In many instances it is evident that the subject does not interest them, while in still other instances they simply say that they saw no insane people. Hence has arisen the mistaken idea that insanity is a product of civilisation, and that it is rare or unknown among savage or barbarous people. I have taken the trouble to collect numerous references from the writings of travellers on this subject, and I shall read a few of them for the purpose of showing the unfounded nature of the belief which has arisen on this subject. Dr. Felkin informs me that he has seen, in all, some thirty or forty lunatics on the White Nile. He also saw some maniacs chained. He was the first to tell me a curious fact, of which I have since had confirmation from other sources, namely, that the type of insanity among the African natives is different from that in Europe. The prevailing form of mania is a short, acute kind, lasting only a day or two, during which the sufferer is driven away to the woods, or voluntarily runs away, returning again in a few days apparently restored in mind. Idiocy was very common in his experience, and so was suicide. Thompson, in his book, "Through Masailand," states that he found insanity very common. The myths and folk stories of the people are full of reference to it. Those affected by lunacy are driven away from the habitations of sane people, or are otherwise isolated. He also found idiocy very common, especially among the dwarfs and albinos, the latter of whom were numerous, and about the prevalence of mental defect among them there was no doubt. In a book entitled "The Indian Tribes of the United States," edited by Francis S. Drake, reference is made to an Oregon Indian woman who appeared to be demented. "She sang in a wild manner, and would offer to the spectators all the little articles she possessed, scarifying herself in a horrid manner if any one refused to accept her presents. She seemed to be an object of pity to the Indians, who allowed her to do as she pleased."[1] Captain Cook, in his "Voyages," referring to the South Sea Islanders, says: "We met with two instances of persons of disordered mind, the one a man at Owhyhee, and the other a woman at Oneheeow. It appeared from the particular attention and respect paid to them that the opinion of their being inspired by the Divinity, which obtains among most of the nations of the East, is also received here" (in the Pacific).[2]

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[1] "The Morison Lectures," delivered before the Royal College of Physicians, Edinburgh.

Ellis, in "Polynesian Researches," says: "Insanity prevailed to a slight degree, but individuals under the influence met with a very different kind of treatment. They were supposed to be inspired or possessed by some god whom the natives imagined had entered every one suffering under mental aberration. On this account no control was exercised, but they were treated with the highest respect. They were, however, avoided," etc.

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[1] Vol. i. p. 205.

[2] "Cook's Voyages," vol. iii. p. 131.

A distinguished writer, and a graduate in medicine of this University, told me that when he was in the South Sea Islands he bore a commission from a friend and former teacher to procure, if he could, a specimen of a Polynesian skull. He experienced much difficulty in the quest. At last he met a lonely man whom every one seemed to avoid, and engaged his services for a small consideration. The man was true to his promise, and at the appointed time procured a suspiciously fresh-looking skull, refusing all information as to where he had obtained it. My informant was not a little uneasy over the transaction, but he was afterwards assured by a competent authority that the procurer of the skull was a lunatic, whose actions, however outrageous, none of his fellow-islanders would dare to question. Emin Pasha, in his book "Central Africa," says: "Insanity and also temporary mental aberration are frequent. The latter is treated with herbal remedies, which effect an immediate cure by means of sleep and sweating."[1] Wilson and Felkin state: "Temporary madness is pretty common, and generally lasts for three or four days, but persons thus afflicted do not become very violent."[2] I might go on indefinitely multiplying extracts from the writings of travellers to the same effect, but it would serve no additional purpose. When speaking of epilepsy and of hysteria, in a previous lecture, I pointed out that no nation or race in the world was free from these affections, and that if there was any difference between races it was in the extent to which they were invaded by these diseases. If such diseases as hysteria cannot exist independently of the neuropathic constitution, and if insanity is equally dependent upon that constitution, then it is the constitution itself, and not any particular manifestation of it, which we ought to endeavour to trace. To my mind it seems conclusive that if a race is largely affected by hysteria, the individuals composing it must have a corresponding share of the neuropathic constitution in their heredity. I also believe that the lower animals are equally subject to pathological mental aberrations. One cannot read such articles as those written by the late Dr. Murray Lindsay of Perth,[3] or Pierquin's remarkable book,[4] without being convinced, not only of the great variation of mental manifestations by animals of the same species, but also of the existence of pathological mental conditions among them. Further, a perusal of the mental condition induced in animals by removal of the parathyroid glands, as performed in the experiments of Herzen and Schiff, reveals the

[1] "Central Africa," p. 94.

[2] "Uganda and Egyptian Soudan."

[3] *Journ. Ment. Sc.*, London, vols. xii. xvii. and xxiii.

[4] "De la folie des Animaux," Paris, 1839.

possibility of acute insanity in several species of animals.[1] But the important reason why statistics differ as between savage and civilised people is that the type of the race, the cerebral organisation, and consequently the mode of reacting to the environment, are all different. No doubt the same forms of mental disease are to be found among savages as among ordinary civilised Europeans, with certain exceptions. A little consideration will show that insanity of such types must be more or less concealed by the want of culture and education among savages. For example, what can it matter to a savage tribe though one of its members should be the subject of hallucinations? Of what great interest would it be that he should profess to be possessed by the devil or bewitched? I might go a step further, and ask, What would have been the result in Scotland three hundred years ago, if an individual were to express delusions of persecution referred to unseen or occult agencies? Such a person would undoubtedly run the risk of being accused of communing with the devil, and might be burned alive. At the least, he would be liable to the gentle persuasion of the thumb-screws and the boot. It is well known that in the days of Louis Philippe, no later than the early part of last century, when the power of the Church was supreme in France, it was considered prudent to conceal certain obscure or unusual symptoms, lest a charge of witchcraft should be based upon them. What medical significance could the symptoms of melancholia have in a non-ethical and a non-scientific society? In a previous lecture, I pointed out that so far from the neuropathic constitution being considered pathological among barbarous people, its manifestations are regarded as valuable qualities, and are regularly put to a marketable use. The subjects of epilepsy and hysteria supply the ranks of the soothsayers, the magicians, the workers of miracles, and the priests. The contention, therefore, that neuropathy, which is the basis of the neuroses and of insanity, is less common among savage and barbarous people is wholly unfounded. There is, however, another reason why this belief in the immunity of the less civilised from insanity has obtained currency, and it is because no qualified person has ever been at the trouble to investigate the matter. About a year ago, Professor Kraepelin of Munich went to Java and analysed the forms of insanity among the natives in one of the large asylums there.[2] His results, though not yet fully published, are highly significant in their bearing on this question. His first inquiry was whether the influence of climate and other tropical conditions of life modified in any way the symptoms of mental disease. He found, however, that Europeans born and reared in Java present exactly the same clinical types of mental diseases as at home. As to the abuse of stimulants and narcotics, the natives do not drink alcohol, and there were therefore no cases of alcoholic insanity among the native population of the asylum. Opium smoking and abuse of the drug is, however, common, yet no patients in the asylum owed their insanity to that cause. The same is true of the large asylum at Singapore, in which city the Chinese population is notoriously given to the abuse of the drug. Of especial interest also is the fact that out of 370 insane natives there was not a single case of general paralysis; whilst among fifty European men who were inmates of the asylum at the same time there were eight cases. There is no satisfactory explanation of that fact, on the basis of the ordinarily accepted theory of the causation of the disease, for the native of Java is not less the victim of syphilis than other similarly circumstanced people. For an explanation, we must fall back upon such imperfectly understood questions as racial differences and race types. Dementia præcox was found to be extremely frequent, and, on the whole, presented similar symptoms as are found among Europeans. On the other hand, mania-melancholia was rare. Many cases seemed to bear a resemblance to it, but they were found, on closer observation, to be distinct and peculiar forms of epileptic or hysterical mania. In those cases in which there was no doubt in diagnosis, the symptoms presented several variations from the European type. Especially was this the case in the depressed form of the mania-melancholia syndrome, where many of the characteristic symptoms were wholly absent. For instance, ideas of "sinning" were never expressed, and maniacal agitation was less developed, and more monotonous, than is usual in Western Europe. The great difficulty experienced in forming a satisfactory diagnosis of mental affections in Java was the preponderating amount of "amok" and "latah" among the patients. The symptoms of these semi-hysterical diseases not only formed special clinical groups, but they appeared also to colour the character of other and distinct forms of insanity. As I mentioned in a previous lecture, latah is the great mental affection of the Malays, just as hysteria is the corresponding disease *par excellence* of the Samoyeds and Kamschatkans, and other nations of North-Eastern Europe and Northern Asia. Short, quickly-passing hystero-maniacal attacks, similar to those which Emin Pasha and Felkin describe among the natives of the Soudan, Kraepelin describes as frequent among the Malays. This leads to the conclusion that it is not so much a question of the frequency of insanity as of its type which ought to be the basis of inquiry when studying the manifestations of insanity among peoples widely separated in development, whether racial or social. We see, then, that statistical insanity in its fluctuations must depend upon the scientific standard of the people whose insanity is being considered, and upon their ethical attitude towards disease of all kinds. It cannot depend upon an absence of neuropathy or psychopathy, for the theory of variation forbids the possibility of the existence of a community in which the members are at a uniform level of physical or mental endowment. But the recognition of insanity as a disease, by a community, is very gradual, and older notions as to its supernatural origin linger for a long time, even after the general acceptance of newer ideas Consequently, there is a tardiness in applying for public relief among the less educated portions of the community. Again, as the occurrence of insanity in a family is rightly or wrongly regarded as a social disability, a reproach or stigma, the sane members of the family make every effort to conceal it. For various reasons of a social nature, these barriers against publicity are gradually breaking down, and both the rich and the poor are less reluctant to acknowledge that they have insane relations. The Royal Commission appointed to inquire into the condition of the insane in Scotland found that the number of the insane of whom there was official cognisance in the year 1855 was 3328. It was not until the Commissioners had called for returns from the chief constables and procurators-fiscal in each division of the country that they found, from the completed returns, that there were 7403 insane persons, or more than twice the original number. But it must not be presumed that the Commissioners succeeded in ascertaining all the insanity in the country, although they were able to show that it was 122 per cent. more than it was officially registered. When the General Board of Commissioners in Lunacy came into office in 1858, there were officially registered 5824 lunatics of all classes, or 1·92 per 1000 of the population.

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[1] Jeandelize, "l'Insufficance Thyroidienne," Paris, 1903.

[2] *Centralbl. f. Nervenh.*, Leipzig, 1904, July.

On the 1st of January 1901 there were 15,899 lunatics, or 3·59 per 1000 of the population—an increase of 173 per cent.—while the population had only increased 42 per cent. in these forty-three years. In the census of 1901 there was included for the first time a query with respect to the occurrence of "feeble-mindedness," in addition to the former query regarding lunatics. The result was to show that, instead of 15,000, there were 20,291, or 4·54 per 1000 of the population. Here again the official statistics were below the actual facts, but this time by only 28 per cent.

Table I.

Years.	Official Figures.	Per 1000.	Figures Specially Ascertained.	Per 1000.	Per Cent. Difference.
1858	3,328	1·15	7,403	2·56	122 per cent.
1901	15,899	3·59	20,291	4·54	28 ,,

We see that while in 1855 the official figures were 122 per cent. below the returns otherwise ascertained, in 1901 the figures were only 28 per cent. below the census returns. The obvious inference is that the official lunacy figures are year by year slowly approximating to the actual truth, so far as that is possible under the existing law. Such a theory would, of course, imply that, supposing the census returns of 1901 to be accurate (which is, I admit, an assumption) that the return obtained by the Royal Commissioners from the constabulary of Scotland should have contained 5515 more persons than it did; in other words, there were upwards of 12,900 mentally unsound and defective persons in Scotland in 1855. There are reasons for believing that the census returns of 1901 are more accurate than the constabulary returns of 1855. In any case, they approximate much more nearly to the official lunacy figures.

In 1830, it was estimated that in Italy there was one insane person to 3785 of the population; in 1890, there was one insane person to 1350. Would it not be monstrous to assert that these figures proved a corresponding increase of insanity in Italy in sixty years? As a matter of fact, both computations are very much below the actual truth.

There are many more reasons for believing that the variation of mental unsoundness is a fixed and constant one, from year to year, than for believing that insanity is increasing. For our ideas regarding what constitutes insanity, of the cases that can benefit by care and treatment, as well as our whole ethical attitude towards disease, has altered greatly in the last forty-six years. There is, on the other hand, no evidence whatever that we have altered in our physical or mental constitution in that time, or that we expose ourselves more to influences which promote the occurrence of insanity. The people are more sober, better fed, better clad, and better housed, and although there is still much to be desired in those respects, yet the relative improvement in every aspect of the social organisation is steadily increasing. If the theory I present is taken exception to, on the ground that it is largely founded on assumption, it may be retorted that the theory of the absolute increase of insanity is founded on assertion, with nothing whatever to support it.

I proceed next to deduce a few of the important lessons which may be gained from the statistics of insanity, and which will, I hope, help to throw some light upon the difficult question just referred to.

When we divide the population of Scotland into the age periods 0 to 20, 20 to 40, 40 to 60 and over, we find that nearly one-half of the people are below 20 years of age (45·9 per cent.).

TABLE II.—*Age Distribution of the Population of Scotland of Pauper Lunatics admitted to Asylums in* 1897; *and of all registered Pauper Lunatics in* 1897.

(PERCENTAGE.)

	Age Periods.			
	0–20.	20–40.	40–60.	60 and over.
Population of Scotland	45·9	29·4	16·7	7·8
Admissions to asylums	5·9	45·9	34·4	13·7
Resident in establishments and private dwellings.	2·6	33·6	44·3	19·3

But the number of pauper lunatics, as shown in this table, who are annually admitted to asylums under that age is only 5·9 per cent. of all the admissions. Consequently, the greater the number of the people of any community, who are less than 20 years old, the smaller will be the proportion of insanity in that community. By far the greater number of people, 45·9 per cent. of the whole, according to this table, become insane, and are sent to asylums between the ages of 20 and 40 years, notwithstanding the fact that the population between those ages is considerably less than it is under 20 years—29·4 as against 45·9. From 60 years and upwards the population begins to decrease in number, as we see in the table, where only 7·8 per cent. of the people are above that age. But the percentage of occurring lunacy does not fall in the same proportion, for it is 13·7 per cent. of the whole. Therefore the liability of the aged to insanity is more than twice as great as that of the young. Now, the population of the various communities, composing a country like Scotland, varies in its age distribution considerably, especially with regard to the members who are below 20 and over 60 years. The age of the people between 20 and 60 does not vary so much. Consequently, the number of persons living over 60 years considerably influences the proportionate amount of insanity, for the more numerous they are the more insane will they contribute towards the total. Let us look at the same question from another point of view. I show in this table the numbers of pauper lunatics resident in Scottish asylums in the year 1897, distributed according to age.

The figures are necessarily different from those in the preceding lines of the table, because the period of residence alters somewhat the age distribution. The population, of course, remains the same. If we take the ages from 0 to 20 years, we find that while 45·9 per cent. of the population is under the age of 20, only 2·6 per cent. of all the insane in asylums are under that age. In the period 20 to 40 the proportions are reversed, for, while 29·4 of the population is between those ages, there is 33·6 of the insane. Coming to the age period, 40 to 60, we see that, while the percentage of the population living at that age is only 16·7, the number of the insane (44·3 per cent. of the whole) is the largest of any age period. Finally, while only 7·8 per cent. of the population is over 60 years of age, 19·3 per cent. of the insane are over that age. In respect of the age distribution of insanity, therefore, we see that both tables are agreed in showing that, from a statistical point of view, the insanity of youth is a negligible quantity; that from 20 to 60 years of age the number of the insane living increase steadily year by year; and that over 60 the liability to become insane is greater than under 40, and very much greater than under 30, and so on.

Before we can compare the proportion of insanity in one district with that in another, we must know whether the age in the two communities is similarly distributed; for it is manifest that if one community has a larger number of people under 20 years of age than the other has, the one with the lower number will be at a disadvantage in the comparison. Also, that the one with fewer persons living over 60 years of age will show less insanity in comparison with the other. Again, the liability of the two sexes to insanity varies appreciably in favour of the female sex. The relative proportion of the sexes in a community must therefore affect the proportion of the insane in that community. It is necessary, from all that has been said, to correct our lunacy statistics in exactly the same way as statisticians correct the mortality rates of communities for purposes of comparison. With the details of the process, which is laborious, I need not trouble you, but the following table will show the necessity for such a correction:—

TABLE III.—*Table of Age Distribution of the Population in different parts of the Country.*

(PERCENTAGE.)

	Age Periods.			
	0–20.	20–40.	40–60.	60 and over.
Scotland . . .	43·6	31·3	17·2	7·6
Rural districts . .	44·7	28·7	17·2	9·6
Large town districts .	42·9	33·5	17·1	6·1
County of Dumbarton .	44·9	32·4	16·2	6·1
County of Argyll . .	39·8	28·3	19·9	11·7

The county of Dumbarton has a lower rate of insanity than the Scottish average. The county of Argyll has, as a whole, one of the highest lunacy rates among the Scottish counties. It will be seen from the table that the age distribution of its population is as unfavourable as possible, when compared with Dumbarton, for an apparently high lunacy rate. In the first place, its population under 20 years is 5·1 per cent. below that of the more favoured county in this respect. In the second place, the percentage of people between 40 and 60 is higher by 3·7 per cent., and, as has been pointed out, 44 per cent. of the insane are between those ages. In the third place, the number of persons living over 60 is 5·6 per cent. higher, and at that age about 20 per cent. of the insane are found.

Having shown the necessity which exists for a revision of the recorded lunacy rates, by means of correction for age and sex distribution, after which only is comparison between different districts possible I proceed to show the results of such a correction upon the recorded lunacy rates of the Scottish counties.

The first column, "Standard Rate," is calculated and indicates what the proportion of lunacy in each county would be if the age and sex distribution of its population were the same as that of Scotland as a whole. Thus the county of Kincardine has a population exactly similar to that of Scotland, and the counties of Aberdeen, Fife, and Clackmannan also closely resemble the Scottish mean in this respect. On the other hand, the county of Sutherland presents the most abnormal composition of the population of any of the counties, although it is closely resembled by the whole group of northern and north-western counties. The second column shows the factor of correction which it is necessary to apply to the "recorded rate," which is given in the third column. The last column is the "corrected rate." The correction, it will be seen, has had the effect of raising the recorded rate in eight counties, and of lowering it in the remaining twenty-four; the county of Kincardine, having a sex and age distribution similar to that of Scotland, is not affected.

If insanity is a variation, it would not be in accordance with what we know of variation to find it parcelled out in equal proportions in each geographical division of the population. If the population were stationary in regard to births, deaths, marriages, emigration and migration, then and then only would a variation be constant. The county division is too large to help us to understand the local conditions which influence the fluctuations of statistical insanity within it. Unfortunately, the census figures do not condescend to smaller divisions than the county, and it is therefore necessary to fall back upon the less perfect indications to be obtained from the pauper lunacy returns.

TABLE IV.—*Recorded and Corrected Lunacy Rates per* 1000 *Persons living in Thirty-three Counties in Scotland, at* 31*st March* 1901.

Counties.	Standard Lunacy Rate at 31st March 1901.	Factor for Correction for Sex and Age Distribution.	Recorded Lunacy Rate at 31st March 1901.	Corrected Lunacy Rate at 31st March 1901.
SCOTLAND	4·54	1·0000	4·54	4·54
1. Selkirk	4·90	0·9265	3·04	2·82
2. Linlithgow . . .	4·03	1·1266	2·62	2·95
3. Dumbarton . . .	4·32	1·0509	2·94	3·09
4. Clackmannan . .	4·52	1·0044	3·31	3·32
5. Peebles	4·95	0·9172	3·72	3·41
6. Kinross	5·04	0·9008	3·87	3·49
7. Renfrew	4·38	1·0365	3·54	3·67
8. Kincardine . . .	4·54	1·0000	3·84	3·84
9. Lanark	4·26	1·0657	3·67	3·91
10. Ayr	4·33	1·0485	3·77	3·95
11. Wigtown	4·80	0·9458	4·25	4·02
12. Fife	4·59	0·9891	4·09	4·05
13. Edinburgh . . .	4·65	0·9763	4·44	4·33
14. Kirkcudbright . .	4·90	0·9265	4·75	4·40
15. Berwick	5·03	0·9026	5·03	4·54
16. Stirling	4·28	1·0607	4·68	4·96
17. Dumfries	4·91	0·9246	5·48	5·07
18. Roxburgh	4·99	0·9098	5·59	5·09
19. Forfar	4·72	0·9619	5·32	5·12
20. Banff	4·60	0·9870	5·35	5·28
21. Bute	5·21	0·8714	6·12	5·33
22. Shetland	5·53	0·8210	6·57	5·39
23. Aberdeen	4·53	1·0022	5·41	5·42
24. Orkney	5·48	0·8285	6·69	5·54
25. Perth	5·04	0·9008	6·16	5·55
26. Elgin	4·79	0·9478	5·96	5·65
27. Haddington . . .	4·69	0·9680	6·00	5·81
28. Sutherland . . .	5·54	0·8195	7·42	6·08
29. Inverness	5·09	0·8919	6·94	6·19
30. Caithness	5·12	0·8867	7·03	6·23
31. Ross and Cromarty .	5·16	0·8798	7·52	6·62
32. Nairn	5·00	0·9080	7·32	6·65
33. Argyll	5·14	0·8832	8·20	7·24

In the county of Argyll there are many parishes with a low lunacy rate, and it is because there are certain parishes which have a persistently high rate that the county as a whole occupies the position of having a larger lunacy proportion than the other Scottish counties. It is necessary to inquire a little more closely into this point. I begin by showing the following table, which reveals the difference between the amount of pauper lunacy in three large urban centres, which are constantly increasing their populations by immigration from the country districts, and three counties in which the pauper lunacy rate is high, and whose populations are year by year decreasing owing to emigration to urban districts and to colonies over the seas.

TABLE V.

	Population.	Number of Pauper Lunatics.	Per 1000.		
			Standard Rate.	Recorded Rate.	Corrected Rate.
Argyll Caithness Inverness	197,616	1112	3·37	5·62	4·86
Aberdeen Dundee Edinburgh	631,513	2076	3·12	3·28	3·06

The chief points in this table are, that while the population of the cities is more than three times as great as that of the counties, the pauper lunatics in the counties are more than half as numerous as in the cities. Even when allowance is made for the difference in age and sex distribution, the proportion in the counties named is higher by 1·8 per 1000 than in the three cities. We must look for some explanation of this within the counties themselves. On examining the relative proportion of pauper lunacy in the various parishes forming a county, we find considerable differences which are not casual or temporary, but which have persisted with more or less constancy during the comparatively few years in which it is safe to trust to statistics—for it must be remembered how recent statistics dealing with insanity really are. I shall deal with the three counties of Argyll, Caithness, and Inverness, which have figured in the preceding table. In the county of Argyll there are twenty-four parishes in which the pauper lunacy rate is above the average of the county, and fifteen parishes in which it is below the average. In one or two parishes it is, of course, the same as the average, but in the majority of the fifteen it is below the average of the county, and approximates to that of Scotland. I show the following table, which sets forth the relative proportion of pauper lunacy in these two groups of parishes.

In the larger portion of Islay, which is industrial (the chief industry being the manufacture of whisky), in the Cantyre peninsula, where new methods of agriculture have largely been introduced, and in the eastern mainland parishes which border on the estuary of the Clyde, a new population has arisen, while in the remoter parishes and the Isles we find a dwindling and a stagnant population.

TABLE VI.—*Showing Distribution of Pauper Lunacy in the County of Argyll.*

	Population, 1871.	Population, 1901.	Increase or Decrease.	Pauper Lunatics per 1000.		
				Standard Rate.	Recorded Rate.	Corrected Rate.
GROUP A—						
Twenty-four parishes.	39,568	30,274	– 9294	3·69	9·05	7·14
GROUP B—						
Fifteen parishes	35,853	43,368	+ 7515	3·22	3·68	3·33

I select another group of parishes within the County of Caithness.

TABLE VII.—*Showing Distribution of Pauper Lunacy in the County of Caithness.*

	Population, 1871.	Population, 1901.	Decrease.	Pauper Lunacy per 1000.		
				Standard Rate.	Recorded Rate.	Corrected Rate.
GROUP A—						
Three parishes .	11,411	8,389	– 3052	3·59	8·34	6·78
GROUP B—						
Five parishes .	9,494	7,825	– 1669	3·31	3·88	3·39

It is manifest that the difference in the decrease of population in the two groups, though considerable (9 per cent.), is not sufficient to account for the fact that group A has a pauper lunacy rate exactly double that of group B.

The three parishes forming group A are crofting and fishing districts, and any drain on their population cannot be replaced, for crofting and fishing are industries which are hereditary and not acquired. Therefore, when the people leave, their place is not supplied by a fresh population as occurs in an industrial district. The five parishes designated group B are also agricultural parishes, but not to any extent crofting or fishing. Loss of population does not, therefore, affect them in the same way, for where there are large farms there is a constant migration of new individuals, and consequently an infusion of new blood.

I come now to the third county, namely, the county of Inverness. I select the Western Isles of that county, where another and important aspect of the problem presents itself.

TABLE VIII.—*Showing Distribution of Pauper Lunacy in the Western Isles of Inverness-shire.*

	Population, 1871.	Population, 1901.	Increase or Decrease.	Pauper Lunacy per 1000.		
				Standard Rate.	Recorded Rate.	Corrected Rate.
SKYE—						
Seven parishes .	18,151	14,619	−3532	3·48	7·79	6·52
OUTER HEBRIDES—						
Five parishes .	15,973	17,818	+1845	3·00	3·00	2·91

The insanity of Skye, according to this table, is more than twice as great in proportion as that in the Outer Isles of the county. The social and industrial conditions of the people in the two groups are exactly the same. They are chiefly crofters and fishermen. The only apparent distinction between the two groups is that the population of the Outer Isles has been increasing, naturally, by excess of births over deaths, while the population of Skye has decreased steadily, notwithstanding its natural increase, for thirty years.

It is now seen beyond dispute that a population which is decreasing is at a disadvantage with respect to the proportion of statistical lunacy; that an increase of the population is necessary in order to regulate the production of this variation. It matters not how the increase is attained. It may be by natural increase, as in the case of the population of the Outer Hebrides of Inverness, or by immigration; as in the large cities. But there may be a low lunacy rate accompanying a decreasing population, as we have seen in group B of the county of Caithness. The same is apparent in the statistics of the county of Wigtown, which has a remarkably low lunacy rate and a falling population. But in Wigtownshire and group B of Caithness-shire the social conditions are different; the population of these groups is largely composed of farm-servants and employees of a more or less migratory disposition, while in the more purely fishing and crofting districts the population is stagnant, and the elements removed are not replaced by sexually efficient, young, healthy adults. Like every other variation, insanity can only be held in check—swamped out—to use a common expression, by extensive inter-crossing. New blood can only be obtained if there are units to introduce a new strain.

There are, then, two reasons why a decreasing population favours a high lunacy rate—(1) Because the normal age distribution of the population is greatly modified; (2) because there is not a sufficient introduction of new blood to check the increase of the variation. In order to illustrate the first point, I have grouped the populations of the parishes we have just been discussing in the counties of Argyll, Caithness, and Inverness, together, under various age periods. The parishes with a high lunacy rate come first, and next in the table are the parishes with the low pauper lunacy rates.

TABLE IX.—*Showing Age Distribution (per Cent.) in Special Groups of Parishes.*

	0–20.	20–30.	30–40.	40–50.	50–60.	60–70.	70 and over.
HIGH LUNACY RATE—							
Argyll (Group A) . .	36·1	14·4	13·3	11·8	9·6	7·5	6·4
Caithness (Group A) . .	40·1	12·0	10·7	10·0	8·9	8·7	9·2
Skye	41·9	11·7	10·9	10·1	9·7	8·3	7·0
	39·7	12·7	11·6	10·6	9·4	8·2	7·5
LOW LUNACY RATE—							
Argyll (Group B) . .	42·4	16·2	12·5	10·7	8·1	6·0	4·1
Caithness (Group B) . .	42·7	13·1	9·6	10·7	8·2	8·1	7·0
Inverness—Outer Isles .	43·0	13·5	12·3	10·2	8·3	6·7	5·1
	42·7	14·3	11·5	10·5	8·2	6·9	5·4

It will be seen that, while the percentage of persons between 30 and 50 are practically the same in the two groups, there are marked differences in the age groups between 0 and 30 and between 50 to 70 and over. Now, as has been already pointed out, these age periods exercise a considerable influence in lunacy statistics, for the number of the insane under 20 is immaterial, while the number living over 50 considerably modify the statistics. It is necessary to point out, that in dealing solely with the statistics of pauper lunacy a slight element of fallacy has to be reckoned with, namely, the differences in administration due to the individuality of the various officers who administer the Poor Law, as well as the difference in custom in the various divisions of the country. The fact has also to be borne in mind, that when a community is being drained by emigration, the weak, the insane, and the diseased are, as a rule, left behind, so that the proportion of these to the general number increases by mechanical ratio. Exactly the reverse process is seen in the large urban centres, which are being constantly reinforced by the addition of young adults. I have sufficiently directed attention to the great importance of the age distribution of a population in respect to lunacy statistics. There remains the question of the isolation of a community, especially as regards its marriage isolation.

I can use no figures in support of the hypothesis, that in order to regulate the proportion of any form of variation, especially a deleterious one, a community must not be too limited in its material for sexual selection. In insanity there is probably more than one form of variation. There is, for instance, mental defect, which is largely a teratological variation. There is the variation which constitutes the basis of the confusional insanities, which is no doubt a nervous variation in the structure of the brain and the cortical cells, but is also largely a physical variation involving the immunity of the body tissues against infection and of the structure and function of certain body glands. Finally, there is the variation known as the recurrent insanities and the neuroses, of which we are in a state of ignorance at present. All these variations are hereditary, in exactly the same way as phthisis or gout, polydactylism or albinoism are hereditary. But we may disregard these distinctions in the forms of variations of insanity, owing to the unexplained fact that the neuroses and insanity are transmutable in their heredity. That is to say, that the children of an insane parent may be alcoholic, or *vice versâ*, while the children of an epileptic may be insane, or *vice versâ*. The variation which constitutes insanity is the most widely spread of all pathological variations except the phthisical constitution, with which it is in some mysterious way allied. There is no community, so far as we know, that is free from the taint of insanity, although, as we have seen, some communities are more favourably placed and constituted than others, and consequently show less statistical evidence of its presence. There are circumstances which favour the absolute, as distinguished from the apparent, growth of insanity in a community, just as there are circumstances which favour the spread of epilepsy or hysteria or chorea among groups of men or animals. I shall illustrate what I mean by the following three examples. Martin[1] records the following illustration: "The inhabitants of a village of Eycaux had married among themselves from a remote period, and they almost all (men and women) presented a sixth digit on their hands and feet. Gradually they began to extend their matrimonial alliances to a neighbouring village, with the result that the deformity entirely disappeared." I myself know of a fishing community in Scotland, the name of which I prefer not to mention publicly, where Huntington's chorea became so prevalent that from one-fifth to one-seventh of the inhabitants were variously computed to suffer from it. Fishing communities in Scotland are notoriously conservative in their matrimonial affinities, and seldom intermarry with the surrounding population. There are, of course, good reasons for this, principally that a fisherman must marry a woman who knows his work, who can bait his lines and sell his fish. With the increased enterprise which has in recent years characterised the Scottish fishing industry, and with better boats at their disposal, the men of the community I am referring to began to go farther afield in their expeditions, and to intermarry with women in other fishing communities situated all round the coast from Eyemouth to Stornoway. As a consequence, chorea is rapidly disappearing, and will, in a few years, probably vanish entirely. In the last report of the Glamorgan County Asylum, Dr. Pringle, the medical superintendent, says: "Glamorgan owes much of its mental healthiness to the fact of its exceedingly mixed population, one-third consisting of aliens—that is, of people not born within its borders . . . In this county, until it was opened up by the railway, the Vale of Glamorgan was its blackest spot as regards insanity, and its inhabitants were nearly all related and constantly marrying amongst each other." A similar proof of what I have been saying might be drawn from some of the royal families of Europe, especially those of France and Spain, where the introduction of insanity can be traced, and the impossibility of eradicating it, owing to the necessarily limited marriage selection, clearly shown. Time does not permit me to dwell upon this illustration, but I refer you to Ireland's[2] and Auguste Brachet's[3] studies on the subject. In a small and isolated community, one or two neurotic families, containing a large number of sons or daughters who are sexually attractive, fertile, and prepotent, are sufficient to propagate interminably the manifestations of an insanity or a neurosis. Once it is started, nothing but the introduction of new blood can check its spread. There are two safeguards against the probability of a new strain introducing new or similar pathological conditions such as the neuroses or insanity. The first is, that the more extensive field of sexual selection almost invariably results in so blending the old population with the new that unfavourable variations have not the same opportunity of appearing. The second is that, according to the law of chances, the new population is not likely to be tainted in the same way as the old. Take, for example, the average amount of insanity in Scotland. We have seen that it amounts to 4·5 per 1000 of the inhabitants, according to the latest census return. The chances against a randomly selected individual being insane are, therefore, more than 200 to 1. But supposing the psychopathic constitution is twice as frequent as is insanity, even then the odds against a randomly selected person being psychopathic are very large—no less than 100 to 1.

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[1] Quoted by Delage, "L'Hérédité," p. 214.

[2] "The Blot on the Brain."

[3] "Path. Ment. des Rois de France."

What I have said is, to my mind, sufficiently explanatory of the fluctuations of insanity within a large community such as Scotland. Farther than this it is obviously impossible to go, for we do not know the causes of variation, and if we did we would be unable to explain the origin of different variations.

This concludes what I have got to say upon insanity as a variation. I have shown—(1) That insanity is widely spread among the races of mankind, and that there is probably no community free from it. (2) I have suggested that in this country it is a more or less constant variation in relation to the population as a whole, and that it has probably always been so. (3) I have shown that the causes which influence its fluctuations in a community are similar to those which affect the fluctuations of every other genetic variation, namely, isolation of a community, and, for any reason, a limited marriage selection; and, in a population that is being depleted, the weaker and unfit are left behind.

CLINICAL RECORDS.

A CASE OF HYDATID MOLE.

By H. C. Martin, M.B., *House Surgeon, Royal Infirmary, Perth.*

A young unmarried woman, J. P., æt. 20, a primipara, was admitted to the Perth Infirmary on 28th December 1904, suffering from hyperemesis gravidarum. She was in a very weak condition, and the history she gave was that of having missed five menstrual periods and of having had irregular hæmorrhages from the vagina for about a month, no hæmorrhage having been copious. She had had vomiting for about two months, but during the month preceding her admission to hospital she had been unable, practically, to retain any food by the mouth at all.

Patient was of middle height, and had been, when in health, fleshy (her weight, she said, in July last, six months before admission to hospital, was 10 stones). She was markedly emaciated on admission, weighing only 5 st. 7 lb., the emaciation being general, and presenting a marked contrast to the abdomen, which was distended by a large tumour.

There was considerable asthenia, due, no doubt, to inanition; the temperature was normal; pulse regular, rate 100; urine was scanty, averaging 25 oz. per day, deeply stained with bile, but free from albumin and blood. The stools were rather pale. The conjunctivæ and skin were only slightly jaundiced. The appetite was fair, and the tongue furred all over the dorsum.

The heart and lungs were normal.

The abdomen presented a large mesially placed rounded tumour, such as would be formed by a gravid uterus, and bimanual examination confirmed this. The uterus extended quite 2 in. above the umbilicus, reaching nearly as far as a seven-months' pregnancy. It was softer than normal, and no fœtal parts could be recognised. On auscultation, a uterine souffle could be heard, but no fœtal heart sounds. The patient herself stated that she had felt movements in the abdomen.

Per vaginam, the cervix was enlarged and soft, and the os sufficiently dilated to admit the fore-finger. No fœtal part impinged on the finger, but a soft mass, resembling membranes, could be felt.

The patient was kept in bed under observation, and fed on small quantities of milk and barley water and Valentine's meat juice, while liq. morph. hydrochlor. was given in 10-minim doses, t.i.d. The vomiting became less frequent, and the patient retained nearly all the nourishment she got. The vaginal hæmorrhage continued, but in very small amounts, and no trace of vesicles was discovered. The strength and general condition improved, the patient being kept in bed all the time, the nurse having strict injunctions to watch for any increase of hæmorrhage.

On 8th January 1905, eleven days after admission, there occurred a sudden and profuse hæmorrhage from the vagina, which was at once reported by the nurse. The vagina was firmly packed with sterilised gauze, and $\frac{1}{4}$ gr. of morphia given hypodermically, as the patient was in a very excited condition, while preparations were made for clearing out the uterus.

Patient was put under chloroform, and the uterus cleared out manually, a vesicular mole being removed. A hot intra-uterine douche (1 in 8000 corrosive sublimate) was given immediately, and the uterus contracted well, with very little subsequent hæmorrhage. Patient got 2000 c.c. of saline solution transfused subcutaneously in the abdomen, and strychnine sulphate, $\frac{1}{60}$ gr., and ergotinin citrate, $\frac{1}{50}$ gr., were administered hypodermically. The strychnine was repeated four-hourly, and tincture of strophanthus, 5 minims, by the mouth at the same time, as the heart's action was rather weak. Plasmon was added to the diet. On the evening following, 9th January, the temperature rose to 100°·8, and the pulse rate to 156; the uterus was douched with sterilised water. On the evening of the 10th, temperature had risen to 102°·6, pulse being 140; the douche was then ordered twice daily, and antistreptococcus serum, 10 c.c., was given; next morning, 11th, temperature had fallen to 99°·4, pulse 134, but in the evening rose to 104°·6; antistreptococcus serum was again administered, and next evening the temperature had fallen to 100°·6, pulse 114. Five days after, 18th, the temperature was normal; pulse remained between 80 and 90 for another fortnight.

Patient made a good recovery, and was discharged on 21st February. Her weight on 15th February was 6 st. 10 lb., so that she gained 1 st. 3 lb. while in hospital.

The uterine contents measured about 3½ pints; the vesicles were very numerous but small. Placenta was thin and small, and no trace of an embryo could be found, although careful search was made several times.

REVIEWS OF
BRITISH AND FOREIGN LITERATURE.

The Edinburgh Stereoscopic Atlas of Anatomy. Edited by David Waterston, M.A., M.D., F.R.C.S.Ed., F.R.S.E. Edinburgh: T. C. & E. C. Jack.

It is fit and proper that the department of anatomy should seek to utilise the invention of a former Principal of the University. To Sir David Brewster is due the introduction of the stereoscope in its present form; and although it has been largely adopted for the purposes of landscape illustration and the representation of objects of art, it has not, if we except some German publications, been much employed for the interpretation of anatomical topography. On occasions it has proved extremely serviceable for the purposes of demonstration, but no attempt, so far as we are aware, has hitherto been made to use stereoscopic photographs in lieu of the plates and drawings in our anatomical text-books and atlases. The reason for this is not far to seek; in spite of its many advantages, the method is somewhat cumbrous and costly, and on that account has been regarded rather as a luxury than a necessity.

The present collection of photographs is the first of five sections, each containing fifty subjects. The price for the whole edition is £6, 5s., so that the cost for each plate works out at sixpence a piece, a by no means exorbitant charge when one considers the enormous advantage of being able to study the organs and tissues in relief and in their relative planes.

The present section illustrates the topography of the thorax and its contents, as well as parts of the central nervous system. To those who have infrequent opportunities of refreshing their anatomy by reference to the cadaver, these plates will appeal on account of their startling reality. The appearance of relief is at all times attractive, but care must be taken lest it be not sometimes misleading. To give proper expression to the representation of structures in their relative planes requires due precaution. The use of too wide an angled, or too short a focussed, lens must be avoided; for if such be employed, the result is to disturb the perspective and alter the apparent relations of the planes in which the objects are situated. The present series is not without this defect. In all instances the antero-posterior diameter of the thoracic cavity seems to exceed its transverse width. The heart appears as if placed at some considerable distance from the anterior thoracic wall; and in Plate I. of the mediastinal illustrations the internal mammary veins seem quite two inches in front of the borders of the lungs.

We mention these points not because we regard them as very serious objections, but rather for the reason that they can be so easily remedied. The distortion is due to the forcing of the perspective, and might be obviated by the use of lenses of longer focal length when taking the photographs. We think, too, the editor might have given some instructions regarding the focal length of the lenses fitted on the stereoscope, by the use of which the best results could be obtained.

The preparation of the specimens and the reproduction of the photographs leave nothing to be desired. The editing has been successfully undertaken by Dr. Waterston, and the whole work redounds greatly to his credit and energy.

Gall Stones and their Surgical Treatment. By B. G. A. Moynihan, M.S. (Lond.), F.R.C.S., Leeds. London: W. B. Saunders & Co. 1905.

The work before us is an amplification of a course of lectures which the author delivered at the Medical Graduates' College in London during the spring of last year. It constitutes an admirable résumé of the current views on gall stone disease, and the author has spared no pains to supplement his own experience by the recorded observations of other workers in this field of surgery. In the first chapter we are furnished with a clear description of the anatomy of the gall bladder and bile ducts, illustrated by a series of excellent figures, most of them borrowed from Testut's anatomy.

The varieties and formation of gall stones, and the bacteriology of the bile passages, are dealt with in the second chapter. Italia's conclusions on pp. 45 and 46 were well worth quoting. The discussion of the general pathology of gall stone disease is full and instructive, and some of the illustrations in this section are particularly good, notably those in colour, but the majority are only indifferent.

The sections devoted to the symptoms and signs of gall stone disease are among the best in the book, and contain much useful practical information. In reference to the occurrence of jaundice in association with gall stones, the author remarks, with more truth than elegance, that "Jaundice is a rare symptom of gall stone disease, unhappily. If jaundice occurred more frequently than it does, there would be an earlier and more frequent recognition of the disease." Mr. Moynihan refers with justifiable satisfaction to a case in which he was able by palpation to recognise, not only that the gall bladder was filled with stones, but also "that its shape was hour-glass"—an observation which was subsequently confirmed at the operation. The present writer can recall a case operated upon by the late Mr. John Duncan, in which Dr. J. O. Affleck had been able to diagnose the presence of three moderate-sized stones in the gall bladder.

The description of the "special symptoms of gall stone disease" includes an instructive section on stone in the common bile duct, in which the author draws particular attention to the characteristic temperature chart observed in these cases. Perforation of the gall bladder is dealt with in chapter vii., which contains reports of all the cases of this complication hitherto operated upon. These number fourteen, two of them having occurred in the practice of the author. The subjects of biliary fistulæ and intestinal obstruction due to gall stones are fully dealt with.

The last three chapters are devoted to the operative treatment of gall stones. The author has thought it advisable to include a somewhat lengthy description of the "details of preparation for operations upon patients suffering from gall stones." This really amounts to an exposition of the technique of abdominal surgery, and while the addition of this chapter may lend an appearance of completeness to the work, it contains nothing which is peculiar to gall stone surgery, and in its general lines the technique described is the everyday practice of all operating surgeons. We admit that it is not easy to avoid a certain air of dogmatism in describing the details of one's own technique, and we cannot congratulate Mr. Moynihan on having succeeded in avoiding this fault more than his neighbours. We might, however, have been spared some of the platitudes scattered through this chapter. It may go without saying, for example, that "for the proper observance of cleanliness during operations the surgeon should be properly clad"; that "the garments which are suitable for daily wear are surgically unclean"; that "it is evidence of careless work to see a patch only shaved, one-half of the pubic hair, for example, remaining untouched." We cannot agree with the author's statement that "the best drain in the majority of cases is gauze," or that "it absorbs well and conducts fluid away better than another material." Nor are we inclined to be as generous as he is in the matter of stimulants. "If," he says, "the patient has been accustomed to alcohol, *his usual quantity* may be allowed him." The italics are ours.

The descriptions of the individual operations are excellent. We are cordially with the author in his advocacy of drainage in gall stone surgery, even to the extent of approving his dictum, that the so-called "'ideal cholecystotomy' is anything but ideal in practice, and is an operation that is mentioned now only that it may be unequivocally condemned."

A Treatise on Applied Anatomy. By EDWARD H. TAYLOR, M.D., F.R.C.S.I., Surgeon to Sir Patrick Dun's Hospital. London: Charles Griffin & Co., Ltd. 1904.

THIS is a book of which we can speak with unalloyed satisfaction. It fills a void which was only too conspicuous in the national library, and it does so in a manner which is truly admirable. There are many who will agree with the author when he says that the subject of anatomy might with advantage be taught to students of medicine more from the applied standpoint and less as an abstract science. Applied anatomy is essentially that which is of practical value in medicine and surgery, and the marvel is that it has so long been relegated to the second place in the anatomical teaching of the schools. The tendency has been to weigh every fact in human anatomy in the same balance, leaving it to the student to discriminate what he should retain for future use and what he may safely allow himself to forget. Teachers of surgery have, from time to time, attempted to remedy this state of matters, in evidence of which we may instance Professor Chiene's "Lectures on Surgical Anatomy" and Sir Frederick Treves' well-known "Surgical Applied Anatomy." The present treatise by Mr. Taylor is a much larger and a more comprehensive work than either of these, comprising over 700 pages and 178 figures and plates from original drawings and dissections. It is appropriately dedicated to Professor Cunningham, who has done so much to develop the practical teaching of anatomy in its relation to medicine and surgery.

The illustrations are a prominent and very valuable feature in the book. The text considers the various regions and organs of the body *seriatim* from the standpoint of anatomy, pathology, and operative surgery; and although the last of these is not treated exhaustively, still it is sufficiently complete for the purposes of the advanced student and of the practitioner. To these the work can be most highly recommended.

Human Embryology and Morphology. By Arthur Keith, M.D., F.R.C.S. Second Edition. London: Edward Arnold.

The second edition of Dr. Keith's "Human Embryology and Morphology" contains many of the good points of the first edition, that is, it gives clear and concise accounts of the relation of the well-known facts of embryology to abnormal conditions which are met with in the later periods of life. Some of the errors which were present in the first edition have been corrected or removed; those errors, however, were associated for the most part with points of no very great importance, and in many cases they were such as are incidental to first compilations of data. Moreover, the first edition purported to be based upon a series of demonstrations given to a class of students in a hospital medical school, and on that basis it could be accepted as a praiseworthy attempt to solve a difficult problem of medical education. The second edition appears more in the guise of a text-book, and as such can scarcely be considered satisfactory. Presumably it is intended for the use of those who have little or no previous acquaintance with the subject, and if this is the case, bearing in mind the title, sufficient care has not been devoted to the distinction of that which is human from that which is not human. This is a matter of importance; and it is also a matter of importance that, in a book intended for students, views which rest upon a well-established basis should be differentiated from those which are less well established, and more especially that they should be clearly distinguished from ideas or impressions which have as yet little or no basis of support. In this respect the book is at fault, for opinions which have not yet been satisfactorily supported by observations are put forward as if they were well-established facts. Some of the ideas thus enunciated would be extremely valuable as suggestions for further observations, but in their present positions they are not only out of place, but are liable to prove misleading to the uninitiated.

An Atlas of Dermatology, showing the Appearances, Clinical and Microscopical, Normal and Abnormal, of Conditions of the Skin. By MORGAN DOCKRELL, M.A., M.D. London, New York, and Bombay: Longmans, Green & Co.

THREE photographic atlases dealing with dermatological subjects have come out within recent years, each one presenting special characteristics of its own. The earliest was that of George Henry Fox, and if in it the skin tint was in some of the plates somewhat too sallow in hue, the features of the disorder represented came out clearly and well, and permitted of their being sufficiently magnified to bring out details. That of Jacobi was reproduced by the four-colour process from carefully prepared and admirably painted casts made by Cathcart's method, hence the relief was boldly expressed, and an almost perfectly lifelike aspect resulted, but, as holds also in the one now before us, when examined with a lens, the meshes of the muslin employed in transferring, and not the minutiæ of the eruption, came into prominence. In Dockrell's Atlas the feature on which he lays stress is the presentation, for the first time, of the microscopical changes, side by side with those which may be seen by the naked eye. Thus, beneath each clinical picture is a replica of a stained section. There can be no question that Mr. Colhoun has faithfully pourtrayed the histological appearances, and probably there could be no better delineations of the minute anatomy. This commendation may be freely extended to illustrations by the same experienced artist on separate leaves, dealing with the more common fungi and micro-organisms, or with the various parasites and disorders affecting the hair system. We wish we could say as much for the illustrations of the clinical phenomena. Some, if but on a small scale, are characteristic, such as that of adenoma sebaceum, leprosy, lupus vulgaris, and advanced rodent ulcer, but the majority fall far short of the attainable. We are not told if the photographs are taken from drawings or casts, their comparative flatness would rather indicate that they are from drawings; nor does it appear what circumstances have regulated the selection. Taken as a whole, the atlas falls much below the first rank, both in range and in quality. Of the letterpress one need not say much. The author expresses the hope that the explanations may not be considered too meagre; the clinical is restricted to five or six lines in most cases, the microscopical to little more than a bare enumeration of the component elements. Thus, the pictures are in the main disappointing, while the appended microscopic changes, beautifully as they are depicted, can be much more profitably studied in Macleod's "Pathology of the Skin."

Walsham's Handbook of Surgical Pathology. Third Edition. Revised and largely rewritten by HERBERT J. PATERSON, M.A., M.B., B.C. (Cantab), F.R.C.S. London: Baillière, Tindall, & Cox.

WALSHAM'S original work was intended solely for use in the museum of the St. Bartholomew's Hospital, but in this edition, although descriptions of specimens in that museum are still given, Mr. Paterson hopes the scope of the work having been extended it may serve as a text-book for use in other pathological museums.

The pathology of surgical conditions is described very concisely, and specimens illustrative of the individual conditions are related in sufficient detail to guide the student to a proper appreciation of their significance. These descriptions of specimens necessarily constitute a considerable portion of the text, and we think that to students studying in other schools this must considerably detract from the interest and utility of the book. If Mr. Paterson were to extend his labours, and in conjunction with the curators of other museums illustrate the text by the description of specimens from these, we believe the work would have a much wider field of usefulness. This suggestion, if adopted, would mean much work, but the text devoted to general surgical pathology is excellently done, and worthy of a larger number of readers than in its present form it is likely to have. To St. Bartholomew students and to those who can read in the museum of that hospital this work should be of great help.

A Text-Book of Operative Surgery. By Warren Stone Bickham, M.D. Philadelphia, New York, and London: W. B. Saunders & Co.

Mr. Bickham has expended a great amount of labour on the production of this work, which is designed "to describe the surgical anatomy and operative technic involved in the operations of general surgery." The subject-matter is well arranged and accurately stated, and is copiously illustrated by no fewer than 559 blocks. We cannot help feeling that in his attempt to be systematic the author has unduly multiplied the headings and subheadings under which he describes the various steps of each operation. This so distracts and confuses the reader, that it is often difficult "to see the wood for the trees." Nor does the omission of the articles and the adoption of a telegraphic style add to the pleasure of reading the descriptions. It is perhaps inevitable in a work of this scope that some want of proportion should be detectable here and there. We do not, however, see the necessity for describing five different operations for ligation of the innominate artery at an expenditure of five and a half pages, while such operations as orchidectomy and the radical cure of hydrocele are so briefly referred to, and the procedures described are antiquated. The subject of abdominal surgery receives ample consideration, and this section is one of the most satisfactory in the book. Some of the illustrations, *e.g.* figs. 356, 357, 361, are quite out of drawing, the distance between the pubes and the umbilicus being obviously too great. The section on amputations is also satisfactory, but the educative value of some of the illustrations is diminished by the fact that the surgeon is figured amputating at the shoulder, thigh, and knee with something very like a tenotomy knife (figs. 221, 222, 224, etc.). A full table of contents and an exhaustive index render the work easy of reference.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF
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Chloroma.

Dock and Warthin report a new case of this rare and interesting disease (*Trans. Ass. Am. Phys.*, 1904), which owes much of its general recognition to Dock's former paper, published in 1893, at which time he collected reports of seventeen cases. Since then more than twenty have been published, and Dock uses his own new case to serve as a basis for the analysis of these. *Clinical summary.*—Male, æt. 45. Present illness began in November 1902, its chief symptoms being fatigue, dyspnœa, headache, deafness, and noises in the ears, loosening of the teeth, emaciation, and pallor. The main facts elicited on examination (Dec. 2, 1903) were pallor, slight pigmentation of the abdomen, slight enlargement of the glands on the right axilla, a functional pulmonary murmur, tenderness of the tibiæ and sternum, and retinal hæmorrhages. Except for a few cylindroids, the urine was normal; the spleen was not enlarged. The patient died after being in hospital for a week, during which time his temperature was irregularly febrile, his weakness increased, petechial hæmorrhages and attacks of syncope supervened, and his blood showed the following changes:—Red cells, 509,600 to 820,000; hæmoglobin, 15 per cent.; leucocytes, 35,000. There were very few nucleated reds, mostly normoblasts. About 80 per cent. of the leucocytes were atypical, resembled the undifferentiated lymphocytes of the bone marrow, and were difficult to distinguish from those classed as large mononuclears. Polynuclears formed from 5 to 7 per cent., eosinophiles 0·2 to 2 per cent., large and small lymphocytes 4 to 12 per cent., myelocytes 0·1 to 2 per cent., and basophiles 0·4 per cent. The blood thus resembled that of an acute lymphocythæmia, but was more polymorphous than usual, and the diagnosis made was, acute leukæmia, possibly lymphocythæmia in the later stages of a severe anæmia of unknown cause. [It will be noted that the case presented none of the greenish tumours or orbital growths which give such a striking and characteristic appearance to typical chloroma.] A partial autopsy, excluding the head, was made, when the pathognomonic grass-green growths were found infiltrating the sternum and vertebræ. The marrow was pyoid. Greenish-grey lymphoid nodules of various sizes were found in the thymus, right kidney, and liver. The spleen, abdominal lymphatic glands, and follicles of the bowel, were large but not green.

Analysis of twenty-two cases reported since 1893.—The average age of the patients was 18 years, and the duration of the disease five and a half months: males predominated in the ratio of 19 to 3. As to the *location of the growths*, some part of the head (especially the orbits—twelve cases) was affected in all but two cases completely examined. The vertebræ were involved in nine, the ribs in eight, and the sternum and bone marrow each in seven instances. Apparently almost any tissue of the body may be the seat of chloroma, particularly the glands, which were normal in but one case. Most of this series of cases showed a general resemblance in their *clinical features* to those previously reported. A few new points, however, emerge. Bence Jones albumose was present in the urine of one patient. Combined lesion of the mouth and skin—swelling of the gums and cutaneous tumours or eruption—occurred both in Bramwell's and in one other case. Transverse myelitis and sciatica have also been noticed. It is gratifying to us in Edinburgh to learn that Melville Dunlop's case was the first in which the correct diagnosis was made during life. Ear complications—deafness, otitis, etc.—were found in about half the cases. The symptoms of chloroma thus fall into three groups—Mechanical results of the growths, toxæmic (fever and emaciation), and those due directly to alterations in the blood, such as hæmorrhages. *Blood changes.*—In fourteen reports giving detailed data, a leukæmic condition occurred in thirteen; in one only was there "leucopenia with anæmia." Ten observers report acute leukæmia or lymphæmia; the leucocytes varied in number from 8000 to 490,000. In some the typical large lymphocyte alone predominated, in others as many as 30 per cent. of myelocytes were present, while Dock's own case and that of Dunlop's stand intermediate between the two extremes. *Colour of chloroma.*—Except that the green hue is neither a post-mortem change, nor due to the shape of the cells, nor of bacterial origin, nothing certain is known of its nature; possibly it arises from broken-down blood pigment. It may be that it is not always due to the same cause, and perhaps the disease may occur without the greenish tumours; the colour is certainly not present in all the lesions of chloroma, even though they resemble each other histologically. The *classification of chloroma* is still a matter of doubt. Microscopically, most of the cases bear great similarity to leukæmic lymphoma. Myxo-sarcoma, lymphoma, lympho-sarcoma, and sarcoma, are some of the names given by different writers to the tumours. Klein and Steinhaus were the first to record a new departure in the histology, most of the cells in their case being myelocytes instead of lymphocytes. The microscopic appearances in Dock's case form the subject of an extremely minute report by Warthin, for details of which the original must be referred to. Warthin, discussing the findings, says that the growth was primarily in the marrow, and infiltrated the periosteum and surrounding tissues secondarily, the cell of the tumour being identical with the large lymphocytes, large mononuclears, and eosinophile myelocytes of the marrow. The case shows the picture of large lymphocyte leukæmia with primary neoplastic hyperplasia of the marrow, chloromatous infiltration of the periosteum, and metastasis. The leukæmia is undoubtedly secondary to the marrow condition. The idea of a general lymphatic affection may be rejected here; the process is of myelogenous origin, and has become generalised through the blood vessels. It is a general disease only in the sense that the blood vessels contain cells able to proliferate and give rise to metastases. The anæmia is due to diminution of the hæmopoietic function of the marrow, not to hæmolysis. Dock's main *conclusions* are that chloroma is a hyperplasia, primarily in the bone marrow, of the parent cells of leucocytes, resulting in the appearance in the blood of atypical cells in various stages of differentiation corresponding to some of the normal leucocytes. These may be of the large lymphocyte, or neutrophile or eosinophile myelocyte type; whether a small lymphocyte type exists is doubtful. The blood picture may thus form a basis for the classification of varieties of chloroma. An aleukæmic chloroma (or stage of chloroma) may occur. Thus we may have—(1) Aleukæmic chloroma; (2) leukæmic chloroma—(*a*) small lymphocyte, (*b*) large lymphocyte, (*c*) neutrophile, (*d*) eosinophile, (*e*) atypical, or (*f*) mixed cell type. The disease is more malignant than leukæmia, especially in the types with least differentiated cells and above all in the aleukæmic type, which is closely allied to sarcoma. The malignity depends on the replacement of red marrow and abrogation of hæmopoiesis.

Arterio-Sclerotic Colic.

Of late many new types of disease, of which arterio-sclerosis is the causal factor, have been as it were isolated, the peculiar symptom-complex being determined by the localisation of the vascular lesion. Stenocardia and intermittent claudication are instances of these, of which the signs of arterio-sclerosis of the brain and kidneys are well known. *Arterio-sclerosis of the splanchnic vessels* seems also to give rise to a definite clinical picture, which has been discussed by (among other writers) Buch of Helsingfors (*Arch. f. Verdauungs kr.*, Berlin, 1904, November, Bd. x., Heft 5), who supports his conclusions by a large series of cases. One of the most constant symptoms is paroxysmal epigastric pain, which is, as a rule, the chief complaint of the patient. In a first group of cases—*simple arterio-sclerotic colic*—the clinical features are as follows:—The sufferer, usually over 40 or 50, is seized with recurring attacks of severe colic, mostly above the umbilicus, which last only a minute or two, seldom a quarter of an hour. A characteristic of these is that in many cases they are evoked by exertion, in others, on assuming the recumbent attitude, and again, after emotion or anxiety—the same factors, indeed, as precipitate a stenocardiac attack. With the colic the signs of arterio-sclerosis are present; the abdominal aorta is sensitive to pressure, the pain caused resembling that arising spontaneously. The diagnosis is strengthened by the argument *ex juvantibus*, since diuretin, theobromin, or strophanthus speedily remove or ameliorate the symptoms. In a second group of cases the *colic is complicated by contracted kidney*: in these the symptoms are similar, but the general arterio-sclerosis is more marked, and can be recognised directly in the abdominal aorta by palpation. In a third series of patients the *colic is closely related to and precedes attacks of stenocardia* or stenocardiac seizures of the type associated with aortitis of the thoracic aorta. The colic may so dominate the symptomatology that the angina is apt to be overlooked, or it may be associated with the retrosternal pain due to aortitis. In such cases sudden death may occur in an attack. Further analysis of the symptoms of arterio-sclerotic colic shows that the sole characteristic is the occurrence of paroxysms of pain, sometimes with anginal attacks, on exertion, lying down, or mental strain, which pain is promptly relieved and its frequency lessened by the use of diuretin and strophanthus. The diagnosis can usually be readily made on the first examination. There are generally other evidences of arterio-sclerosis—thickening of the vessels, intermittent claudication, cerebral attacks, cardiac enlargement, accentuation of the aortic second sound, or pulsation, dilatation, or displacement of the abdominal aorta, with, in particular and almost invariably, tenderness along its course. In the comparatively few cases where attacks seem to be precipitated by indigestion, doubt can be removed by noting the results of treatment with diuretin and strophanthus. Sometimes the frequency of the seizures (ten or fifteen daily) helps the diagnosis. At its acme the pain radiates in all directions, and is described in very much the same terms as angina pectoris. It is deeply seated and mesial. Apart from the colic there are no dyspeptic symptoms: the HCl content of the stomach is normal, and there is no muscular atony. As this form of arterio-sclerosis often precedes general vascular changes, it is important from the point of view of prophylaxis; it is also important because it is extremely common. In a second article (*ibid.*, 1904, December, Heft 6) Buch discusses *pathology and treatment.* In some cases an aneurysmal dilatation of the aorta causes pain mechanically, but in most instances there is no question of this. By some the pain has been thought to reside in the vessels themselves, from spasm or stretching of the walls Nothnagel supposes that arterial spasm causes contraction of the walls of the bowel and colic. Anæmia of the bowel from vascular spasm has also been blamed. The clinical facts observed by Buch bearing on the nature of the pains are—(1) during an attack the aorta beats more forcibly and may dilate, showing spasm of the splanchnic arteries, and (2) not only the aorta but the lumbar sympathetic is tender. The pain therefore is due to irritation of the sympathetic from vascular changes in its vicinity. In *treatment* diuretin (20 to 30 grs. daily) holds the premier place, and often wards off attacks for months. Next to this comes strophanthus (4 to 8 minims of the tincture thrice daily). Iodides are useful from their vasodilator action. Rest in bed, or in the half-sitting posture, is of value, and warm fomentations round the abdomen for several hours daily benefit some cases. In muscular persons a course of Swedish gymnastics may do good. The diet is guided by the presence or absence of dyspeptic symptoms. Nauheim baths are sometimes helpful, and so is abdominal massage, especially when the blood pressure is high. Treatment on these lines often produces improvement of a lasting character.

SURGERY.

UNDER THE CHARGE OF

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The Treatment of Acute Suppuration by Passive Congestion.

Professor Bier is well known as an ardent advocate of the employment of hyperæmia, active and passive, in many inflammatory conditions. The use of passive congestion in tuberculous joint disease and other chronic joint affections, as advocated by him, is a well-recognised and widely practised method of treatment, although its value is disputed by some. Encouraged by the success of this method of treating chronic inflammations, Bier has recently made use of passive congestion in the treatment of a number of acute suppurative diseases, and the results are now fully described in *München. med. Wchnschr.*, 1905, Nos. 5, 6, and 7. The general principle underlying this method may be briefly stated thus: Inflammation, or the inflammatory reaction attending an infective lesion, is a useful and necessary process. It should therefore not be treated by the usual "antiphlogistic" methods, but should, on the contrary, be encouraged, and the best way of doing this is to induce a passive congestion in the affected part. Bier records 110 cases of well-marked acute and subacute suppurations thus treated, in which pus was found, either by exploratory puncture, by incision, or by its escape from sinuses and fistulæ. As his views are in direct contradiction to much that is taught at present regarding suppuration and its treatment, he describes fully all the cases of acute joint suppuration, tendon-sheath suppuration, and acute osteomyelitis he has treated, in order that others may form their own conclusions on the results attending his methods.

The technique of the treatment is briefly as follows:—Above the diseased area a rubber band is applied tightly enough to produce a marked congestion, and in cases of acute inflammation very slight pressure is sufficient to do this. Two points must specially be borne in mind—First, the limb, although œdematous, must not become cold; and secondly, no pain must be caused. One of the most striking results following the application of the band is the almost immediate lessening or disappearance of previous pain; and if, instead of this, pain is caused or increased, it means that the band has been applied too tightly.

The general effect is that the limb swells up, becomes œdematous, feels warm, and as a rule is of a fiery red colour.

In acute suppurations the congestion is kept up for at least ten hours a day, in severe cases for as much as twenty or twenty-two hours. When the local pressure of the band threatens to interfere with the nutrition of the skin, care must be taken to change it from place to place a little, and to give occasional rests to the skin for one or two hours at a time. As regards the general effects of the treatment, the following points are emphasised by Bier:—Pain is very markedly diminished. The effect on pus formation is variable. As a rule the flow of pus is increased, sloughs are very quickly separated, and, what is much more important, structures which we are accustomed to see necrose under ordinary treatment often survive. Inflammatory processes are localised, and so large disfiguring incisions are avoided, and the function of limbs little interfered with.

In describing the results in actual cases, the author groups them under various heads. First come five cases of pyæmic metastasis, in which the inflammation subsided without pus formation, and which are therefore excluded from the general statistics. Following these, some cases of the conversion of acute into chronic abscesses and the absorption of pus under passive congestion are related.

More striking are the cases next detailed of acute arthritis of the elbow and knee joints, which recovered with complete mobility of the affected joints after treatment with passive congestion alone. No splints were used, no incisions were made, and passive and active movements were carried out from the first. In some of these cases, fistulæ, from which pus flowed, were present, in others pus was withdrawn by a hypodermic needle for examination, but no incisions were made. Bier does not advise that pus should always be allowed to remain in inflamed joints. In cases where improvement does not quickly follow the use of passive congestion, small incisions should be made to allow pus to escape, but drainage and packing should be avoided altogether, as such measures damage the delicate structures of a joint.

Nine cases of acute osteomyelitis are related, mostly in children, all attended with profuse suppuration. Four of these healed without any necrosis of bone; two with extensive necrosis, one where the whole tibial diaphysis was involved, and one where the disease had lasted eight weeks before the case came under treatment. Death occurred in one case where pyæmia had set in before treatment could be begun. The general results in the series of very severe cases related were most satisfactory. Various trials were made to ascertain the best method of dealing with the large abscesses present in these cases, and the plan now adopted is to make incisions just large enough to allow of all pus being completely evacuated, not to employ packing or drainage, and to apply the congesting bandage after letting out the pus. Not the least interesting section of the paper is that devoted to tendon-sheath suppuration. Bier maintains that in cases of well-established tendon-sheath suppuration treatment by free incision, packing, etc., is always followed by necrosis of the affected tendon. His plan of dealing with these cases is first to apply congestion; if rapid improvement follows, no incisions are made; if not, one or several incisions are made to let out pus, and congestion is continued. No drainage or packing is used, and passive and active movements are carried out daily during the intervals when the band is removed. The pus is washed away by gentle douching, and a loose sterile dressing applied, which allows the patient to move the finger himself. Fourteen cases so treated are related, and in eight recovery without necrosis took place, results unattainable, according to Bier, by other methods. In the concluding section of the paper the possibility of harm following the use of passive congestion is discussed. Among the hundred and ten cases treated no case has been seen where real harm followed its use, and only one where the treatment was not tolerated by the patient. In summing up, Bier suggests to those in charge of hospitals that the following conditions are suitable for treatment by passive congestion:—(1) All varieties of subacute and mild inflammations; (2) commencing acute suppurations of all kinds; and (3) acute and subacute joint inflammations and suppurations, and, when the technique of the treatment is thoroughly understood, acute osteomyelitis and tendon-sheath suppurations.

Hernia into the Duodeno-jejunal Fossa.

Haberer (*Wien. klin. Wchnschr.*, 1905, No. 11) records a case of successful operation for strangulation of a hernia into the duodeno-jejunal fossa. The clinical history presented several features of interest, which make the case worthy of record. The patient, a woman 23 years of age, came under observation after four days' illness, which began suddenly after a meal, with violent abdominal pain. Progressive enlargement of the abdomen, persistent vomiting, and complete obstruction of the bowels followed, and continued till the patient's admission to hospital.

When she came under observation she was collapsed, the pulse rate was 160 per minute, the extremities cold and cyanotic. The abdomen was distended, tender all over, and palpation caused marked splashing sounds. Occasional peristaltic movements were seen above the umbilicus. Before proceeding to operation, the stomach was emptied on account of persistent vomiting of small quantities of fluid. Four litres of fluid came away. The distension was thereby completely removed and the clinical picture entirely changed, the distension of the abdomen having been caused by an enormously dilated stomach. On opening the abdomen and lifting up the stomach and transverse colon, only a few empty coils of small intestine were at first seen. Further examination showed that the greater part of the small intestine below the duodenum had passed into the duodeno-jejunal fossa, towards the left, the fossa having been dilated into a large sac passing towards the spleen, below the colon. The free edge of the fossa, in which ran the inferior mesenteric vein, was tightly stretched over the herniated loops of bowel, and to release them it was necessary to ligature the vein and divide the constricting edge, when it was found that the vein was thrombosed. The incarcerated bowel was then released, and the interior wall of the sac removed by clamping and ligaturing it in sections. A quantity of saline solution was then run into the peritoneal cavity, and the abdomen closed. The patient made an excellent recovery, and left hospital completely cured eighteen days after admission. The points specially worthy of note in the case were, the absence of symptoms till complete obstruction set in, the occurrence of visible peristalsis in the abdomen, the enormous accumulation of fluid in the stomach, and the complete change in the clinical picture after its removal. The case is the second recorded of successful operation for the condition. A clear diagram of the appearances presented at the operation, and references to the literature, accompany the case record.

Röntgen Rays and Sterility.

The observations of Tilden Brown and Osgood (*Am. Journ. Surg.*, vol. xviii. No. 9, p. 180) require confirmation, but they are of sufficient importance to be cited. These authors state "that men by their presence in an X-ray atmosphere incidental to radiography, the therapeutic use of or testing of tubes, may, after a period of time, be rendered sterile." This statement is based on the fact that eighteen X-ray workers who had consulted the authors were the subjects either of total azoospermia or of oligo-necrospermia, although none of them had suffered from any venereal disease, or traumatism involving the genital tract. None of them presented physical signs of abnormality of the genital organs, and none were conscious of functional derangement. All those who showed no spermatozoa in their seminal fluid had done extensive X-ray work for over three years. A few who had been so employed for shorter periods showed varying degrees of oligo-necrospermia. The sterility had been produced without any subjective or objective sign denoting its insidious development. Half of the men were married, but no one of them had had a child since engaging in X-ray work. The results of Albers-Schœnberg's experiments on rabbits and guinea-pigs are quoted, and seem to confirm the authors' opinion that the rays blight the spermatogenetic cells. Experiments on animals seem to indicate that the ovaries are even more sensitive to the rays than the testes. The authors advise that workers with X-rays should protect the genital organs by means of an impermeable shield.

OBSTETRICS AND GYNÆCOLOGY.

UNDER THE CHARGE OF

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Lumbar Puncture in Eclampsia.

Henkel (*Centralbl. f. Gynäk.*, Leipzig, 1904, No. 45) reports sixteen cases of eclampsia so treated. The mortality was 25 per cent., which is no better than the average mortality in such cases. In seven of the cases no fluid was obtained after puncture. In one fatal case the post-mortem showed an absence of fluid in the spinal canal, and a small effusion into the ventricles. In five cases a small quantity of fluid was withdrawn with the trochar, and of those two died. In four cases there was a large quantity of cerebro-spinal fluid, but only 30 cms. was allowed to escape. Henkel believes that the quantity of cerebro-spinal fluid is of very slight importance as an etiological factor in eclampsia.

Calcification of the Fimbriæ of the Tubes.

Wagner (*Arch. f. Gynaek.*, Berlin, Bd. lxxiv.) reports the post-mortem appearances in a patient who died from cardiac disease. The uterus, appendages, and broad ligaments were normal, but at the fimbriated end of the tubes there was a roughness found due to scale-like excrescences. The condition was probably caused by a venous hyperæmia associated with cardiac disease.

Frequency of Hæmorrhage in Fibroma of the Uterus.

Pace (*Ann. di ostet.*, Firenze, 1904, December) from the observation of many cases concludes as follows:—In interstitial and subserous fibromata it is variable, being most frequent in large, rare in small tumours. In 118 cases of interstitial tumours hæmorrhage was marked in 55 per cent. In the subperitoneal form it is rare, while in the intra-ligamentous variety it occurs as a long-standing menorrhagia; in the submucous form it is constant, and late in appearing. Changes in the appendages do not have any influence on its frequency.

Vaginal Ovariotomy.

Benger (*München. med. Wchnschr.*, 1904, December) reports on fifty cases. In thirteen the tumour was as large as a man's head. In two cases it was double this size. He points out the importance of protecting adjacent tissues previous to puncture, on account of the danger of contamination with the sebaceous contents of dermoid tumours. The posterior vaginal incision was employed in most cases, and Benger prefers the use of the silk ligature for the pedicle, as in four cases where the angiotribe was employed secondary hæmorrhage occurred, necessitating the application of sutures.

Carcinoma of the Cervix after Supra-vaginal Hysterectomy.

Peraire (*Bull. Soc. anat. de Paris*, 1904, December) reports the case of a woman, æt. 52, operated on for profuse hæmorrhage. The parts removed showed no signs of malignant disease. Four months later haemorrhage recurred, which was discovered to be due to epitheliomatous growths projecting through the cervix. The disease rapidly involved the pelvic connective tissue. The case is of interest as bearing on the disputed question as to whether the cervix should also be removed in all cases. The authors express the opinion that in the case reported total extirpation in the first instance would have given no better result, on account of the extreme malignancy of cancerous growths accompanying intra-uterine polypi.

Ovarian Pregnancy.

Freund (*Monatschr. f. Geburtsh. u. Gynaek.*, Berlin, 1904, October) reports a case in a young primipara. The sac consisted of the ovary as large as an orange; in its wall there were many follicles and corpora lutea. The fœtus measured $\frac{3}{4}$ in. long, and there was a well-formed placenta.—Calmann (*München. med. Wchnschr.*, 1905, No. 6) also reports a case where neither tube, fimbriæ, or infundibulo-pelvic ligament took any part in the formation of the sac, the fertilised ovum being clearly traced to the ovary only. So far thirty-four cases of ovarian pregnancy have been reported.

Ovariotomy at the Extremes of Life.

Weil (*Johns Hopkins Hosp. Rep.*, Baltimore, 1905, March) reports a successful case in a child, æt. 5 years. The cardinal symptoms were:—Trauma and pain three and a half years before admission to hospital, with abdominal swelling of two months' duration. The tumour removed was the size of a cocoanut, and microscopic examination showed it to be an adeno-carcinoma. Weil gives a list of twenty-four reported cases under 5 years of age. The youngest is that reported by Chiene, whose patient was æt. 3 months. Under 10 years he gives a further list of thirty-six cases. He has also collected 130 ovariotomies on patients æt. 70 or over, the oldest being 94, successfully operated on by Thornton.

Cæsarean Section following Ventral Fixation.

Clark (*Johns Hopkins Hosp. Bull.*, 1905, March) reports the following case:—P., æt. 39, had ventro-fixation performed for retroflexion of the uterus. Two years later she became pregnant, and on examination the cervix was with great difficulty reached above the promontory of the sacrum, and well back towards the spinal column. Attempts at external version failed to turn the child, and when the os was fairly well dilated internal version was attempted. On further examination, a loop of bowel was found prolapsed into the uterus. On opening the abdomen, the uterus was found ruptured in its very much thinned posterior wall, and a dead hydrocephalic fœtus was found lying partly in the uterus and partly in the peritoneal cavity. The uterus was amputated from the cervix, freed from its attachment to the anterior abdominal wall, and removed with the appendages. The patient's recovery was delayed on account of maniacal excitement. The author thinks that the rupture through the thinned-out posterior uterine wall had occurred at the time of the attempted external version.

THERAPEUTICS.

UNDER THE CHARGE OF
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Lumbar Puncture in Cerebro-Spinal Meningitis.

In the course of the past ten years, Lenhartz has had occasion to treat forty-five cases of cerebro-spinal meningitis. A few of these were mild cases, but, as a rule, the cases were of a severe type. In the earlier period only occasional use was made of lumbar puncture, but latterly it has been used more freely. As his matured opinion, Lenhartz states that regular repeated lumbar puncture modifies the course of the disease. Both in the early stages and later in the disease it enables us to remove a danger threatening to life more effectually than any other method of treatment. To illustrate this action, he narrates five selected cases in which the effect of the punctures varies. Thus in one or two early cases a couple of punctures was sufficient to cause a complete subsidence of symptoms. In other instances the puncture had to be repeated frequently, *e.g.* in one case eight times, in another fifteen times; in the latter case in all 480 c.c. of cerebro-spinal fluid were withdrawn. The good effect of the puncture is also seen in that stage of the disease where the onset of acute hydrocephalus frequently leads to rapid death. A case of this nature is described. In no instance was any ill effect seen to result from the tapping. The operation itself is easily performed, requiring no special appliances, and can be done in any house. The puncture is best made in the centre of the line joining the crests of the cristæ ileæ. It is rendered easier if the intervertebral space is increased by flexing the thighs on the abdomen. The patient should lie on the side, and the head should not be raised. It is not expedient to remove more than 30–50 c.c. at any one operation, and the pressure should always be ascertained at the same time. After withdrawing the needle it is only necessary to seal the puncture with adhesive plaster.—*München. med. Wchnschr.*, 1905, No. 12.

The Local Action of Diphtheritic Serum.

The diphtheritic infection of the throat and nose is apt to remain for a considerable time after the disappearance of the clinical symptoms. The subcutaneous use of antitoxin has no effect on the local growth, so that recourse is usually made to antiseptic gargles. A couple of years ago Martin pointed out that the local application of an anti-bacterial diphtheritic serum is of considerable efficacy in overcoming the infection of the throat. The best form of applying the serum was as a dried powder, otherwise it is too quickly removed. Dopter has adopted Martin's suggestion. He incorporates the dried anti-microbic serum with gummy matter, and uses it in the form of lozenges. The patient is directed to suck one of these lozenges every hour during the daytime, so that twelve lozenges are taken during the course of the day. This treatment was continued till cultures, made early in the morning, proved free from the Klebs-Löffler bacillus. A series of experiments was carried out on seventy-two patients. Of these, twenty-five were cases of true diphtheria with virulent bacilli, while the remaining forty-seven were pseudo-membranous anginous infections in which the bacilli were not virulent. In the diphtheritic cases the bacilli disappeared in three cases in two days; in seventeen cases in three days; in three cases in four days; and in two cases in five days. Of the other forty-seven cases—in seventeen cases in three days; in three cases in four days; in twenty-five cases in five days; and in two cases in six days. Subsequent observation of several cases occurring among members of the staff shows that reappearance of the bacilli is very rare. Thus in true diphtheria the use of serum lozenges causes the throat to become clear of bacilli within five days. To obtain this good action certain precautions must be observed. The lozenges should be slowly dissolved, so that the serum may remain in contact with the affected parts as long as possible. Consequently the lozenges should not be chewed, nor should any gargle be employed. In a further series of cases the effect of the dried powdered serum, used as a snuff, was tested in cases of diphtheritic infection of nasal mucous membranes. The application in these cases is more unpleasant and less easily carried out. These cases included four of primary nasal infection and twenty-five in which the nasal mucous membrane was simultaneously infected along with the throat.

In the primary rhinitis cases the bacilli disappeared in eight, twelve, and eighteen days respectively. Of the other twenty-five cases, in two cases the bacilli disappeared in three days; in four in five days; in five in six days; in five in eight days; in four in nine days; in three in ten days; and in two in twelve days.

Thus the action on the bacilli in the nasal fossæ is less rapid than on those infecting the throat. Still the action is undoubted. Thus, at the same time as these cases were under observation, two cases of diphtheria occurred which were not treated in this fashion, and in these instances the bacilli were present for thirty-eight and forty-five days respectively. Dopter is inclined to think that the rapid disappearance of the bacilli from the throat protects the patient from the danger of paralysis of the palate, while it also curtails the period of infection, aad thus allows more rapid dismissal of the patients, which is of great importance for the economical administration of the fever hospital.—*Gaz. d. hôp.*, Paris, 1905, April 4.

Prophylactic Value of Diphtheritic Serum.

The curative value of anti-diphtheritic serum is now firmly established. Its exact value as a prophylactic is more uncertain. Wesener has used it as a prophylactic for some time, and the conclusions he has come to are the following:—

It enables us to prevent the spread of diphtheria to the other members of the household. The protection afforded is very marked, but is not absolute, still it allows us to get off with a somewhat less rigorous isolation of the patient. The period of protection lasts from three to four weeks. It enables us to treat many cases at home, provided that a final efficient disinfection is performed. If an injected person subsequently develops diphtheria, either from a pre-existing infection or subsequently, the resulting disease is of a very mild type. For small children 200 units is sufficient, but probably 300–400 units would be even more effective. The extensive use of the preventive injection constitutes an actual saving to the health authorities, as the incidence of the disease is lessened and epidemics are avoided. In Aachen the procedure is as follows. As soon as a diphtheritic case is notified, the receiving officer draws the attention of the parents to the danger of infection, and recommends that all children under 15, who have been in contact, should receive a prophylactic injection of serum. If the parents agree, they are requested to bring the children next day at an appointed hour. The children are then carefully examined, to see if they show any signs of infection. The serum is injected, and the children are brought back for a further inspection next day. If the throat is not suspicious, they are dismissed, and told to report themselves if any suspicious symptom arise.—*München. med. Wchnschr.*, 1905, No. 12.

EUMYDRIN IN NIGHT-SWEATS OF PHTHISIS.

It is claimed for eumydrin, one of the newer atropine derivatives, that its action is purely peripheral, as all effect on the central nervous system is eliminated. Eumydrin is a stable, white, odourless powder, which is freely soluble in water. It is less poisonous than atropine. Several observers state that it is of use in the night-sweats of phthisis. Jonas tested this action on a series of thirty cases, all of which were under observation for at least a month. His initial dose is 1 mgrm., given at bedtime. If the sweating also occurs during the day, a similar dose is given in the morning. In obstinate cases the night dose may be raised to 2 or even 3 mgrms., though the latter amount should only be continued for a short period. Five cases failed to react to this dose, and were not given any more of the drug. The remaining twenty-five cases improved. In seven of these, 1 mgrm. was sufficient, while thirteen required 2 mgrms., and five only reacted when the dose was raised to 3 mgrms., but in most cases these larger doses could be gradually reduced. The action of the drug was obtained in several instances even shortly before death. In no instance was serious intoxication noticed. Occasionally, after the large doses, there was dryness of the throat, but no cerebral stimulation or palpitation was ever caused.—*Wien. klin. Wchnschr.*, 1905, No. 4.

MEDICAL JURISPRUDENCE.

UNDER THE CHARGE OF

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Bismuth Poisoning.

Notwithstanding many warnings, bismuth is commonly regarded as a perfectly innocuous substance. When toxic effects have been recorded from its internal or external use, these have been attributed to the presence of impurities, more especially arsenic and lead. The quantity of such substances which may be present as a result of the process of manufacture is, however, too small to produce the toxic symptoms which have been frequently observed in cases where bismuth has been administered either internally or externally, and which consist in stomatitis, or, in severe cases, in enteritis and nephritis.

Dreesman and Mühlig have each reported cases of poisoning in which bismuth was used as a dressing for burns, as recommended by Bardeleben, and in which the bismuth was proved to be perfectly pure.

The chief symptom observed in these cases was stomatitis with well-marked blue-black discoloration of the gums, tongue, and mucous membrane of the mouth. Mahne now records another instance of its toxic effects which proved fatal. A woman was received into hospital suffering from severe burns of the second and third degrees on the trunk and limbs. The treatment consisted in the application of 10 per cent. bismuth ointment. Three weeks later the patient complained of an unpleasant taste in the mouth and tenderness of the gums. A bluish-black line appeared on the gums, together with black patches on the tongue and buccal mucous membrane. The treatment was at once altered, but diarrhœa set in, and the urine was found to contain albumin and numerous casts. Death occurred at the end of nine weeks. At the autopsy the mucous membrane of the whole of the colon was found to be black in colour. The kidneys were in a condition of parenchymatous inflammation. Mahne has no doubt that death was due to poisoning by bismuth, and not to the effects of the burning. The bismuth was perfectly free from impurities.

The black discoloration of the mucous membrane of the colon might naturally be attributed to extravasated blood, associated with the original burns, a condition sometimes observed, but on investigation the presence of blood was excluded, and the author therefore attributes it to some combination of bismuth, probably a sulphide.—*Berl. klin. Wchnschr.*, 1905, February 27.

The Identification Characteristics of Musicians.

In 1902, Hans Fischer (*Vrtljschr. f. gerichtl. Med.*, vol. xxix., supplement) published an interesting study of "the musician," dealing with the various professional marks by which the players of different instruments might be recognised. He came to the conclusion that it was possible to recognise at once which stringed instrument a musician played from the situation and degree of development of the callosities on their fingers.

Placzek has examined the fingers of a large number of musicians, both amateur and professional, many of the latter being well known celebrities, and finds that the general acceptation of Fischer's statement is by no means justified, and its forensic importance therefore is not of such great value as it would otherwise have been.

Placzek employed finger prints or dactyloscopy, as it is now generally called on the Continent, as an aid in representing the alterations which constant playing produces on the fingers, and some of the results obtained are of considerable interest. It is not possible in a short abstract to give details, but amongst the facts observed were, that amateurs show no characteristic marks, and that, even amongst professional players, they are often non-existent, while, when present, they are liable to vary very much in distinctness or even disappear during comparatively short periods of inactivity. This, however, only applies to skin callosities and not to actual deformities of bone or of a joint, which are sometimes found to be present in one or other of the fingers.

Gonococcus Infection in Children.

At the New York Academy of Medicine, Dr. Emmett Holt recently read a paper on the above subject, which, while not apparently intended as a contribution to medical jurisprudence, yet is of great importance in this aspect, more especially in view of the unanimity of the opinions expressed by those who took part in the subsequent discussion. Although during the last quarter of a century the fact that gonococcal vaginitis is by no means infrequent amongst children of the poorer classes has been recognised, and cases of supposed criminal assault on young children are usually considered with due regard to this fact, yet it is doubtful whether the widespread prevalence of the condition, as indicated in the above paper, is generally known. Dr. Holt found in the Infants' Hospital with which he is associated, a very large number of cases of gonococcal infection, and amongst them the majority consisted of vaginitis. He was convinced from his inquiries that it was almost always present in children's wards, and, in many cases where there was no distinct clinical evidence of vaginitis, a bacteriological examination showed the presence of the organism.

Dr. Koplik, in the discussion, also stated that when he assumed charge of the Mount Sinai Hospital service for children, there was not a female child patient who was not the subject of gonococcic infection.

Other well-known physicians fully corroborated these views.

Amongst the conclusions at which Dr. Holt has arrived, as a result of his observations and experience, are—that gonococcal vaginitis must be recognised as a very frequent disease, and one to be constantly reckoned with in institutions for children. The highly contagious character of the disease makes it imperative that children suffering from it should not remain in wards or dormitories with other children: cases of gonococcal vaginitis can only be excluded from hospital wards by the systematic microscopical examination of a smear from the vaginal secretion of every child admitted. If infected children remain in a ward with others, it is practically impossible to prevent the spread of the disease. Perhaps the disease is more prevalent in New York than in this country, but in any case statements such as the above are of great importance when it is borne in mind how frequent charges of criminal assault on young children are, and how often they are based solely upon the existence of a vaginitis.—*Med. Rec.*, N. Y., 1905, March 25.

The Detection of Poisons in Cremated Bodies.

Mai and Hurt have recently investigated a question of very considerable importance, since the practice of cremation of the dead has become comparatively common, namely, whether in the cremated remains it is possible to discover traces of poisons administered during life. The problem presented itself to Mai by a case in which he was asked to determine whether poison existed in the ashes of a cremated body. The remains were contained in a metal urn, and consisted of fragments of bone and charred wood, three or four nails, and a quantity of greyish-black ashes, the whole weighing about 5½ lb. The heavy metals, cyanogen compounds, and arsenic were searched for, but without result. Hurt and Mai therefore instituted a series of experiments on animals in order to determine whether the discovery of poisons in cremated bodies is possible. The poisons employed were arsenic, hydrocyanic acid, and mercury. Animals were poisoned with these substances, and the bodies cremated with all due precautions to prevent the accidental presence of any of the above substances.

In the ash of the bones of the animals poisoned with arsenic well-marked evidence of the presence of this poison were found, whereas no traces could be discovered in the ashes of the soft parts. The attempts to discover indications of the presence of hydrocyanic acid or mercury in the remains of animals poisoned by such means proved negative. —*Ztschr. f. anal. Chem.*, 1904; *Ztschr. f. Aug. Chem.*, vol. xvii. Heft 43.

A certain Sign of Death by Burning or of Suffocation by Smoke.

The question whether, when the dead body of a person is found partially burnt, the burning took place during life or after death, is one of considerable importance. Murderers not unfrequently attempt to destroy traces of their violence by setting fire to the house or clothes of their victim.

In the case of two children who died as a result of suffocation by smoke owing to the overturning of a petroleum lamp, Coester found, on microscopical examination of the lungs, particles of soot in the bronchi, and even in the smallest bronchioles, some of the latter being completely choked by it. In one of the children death resulted on the third day from broncho-pneumonia, and here, in addition to the presence of soot particles in the bronchi, they were also found in the adjoining tissues, having no doubt been transported there by leucocytes.

In dead bodies exposed to fire, *i.e.* smoke, no soot particles are found in the air passages. Coester therefore regards their presence in any case, more especially in the smallest bronchi, as demonstrated by microscopic sections, as a certain sign that the person was living when the fire occurred. The characteristic appearance of the lungs in such cases is not lost by the survival of the person for some days, notwithstanding the effect of constant coughing; while of importance is the further fact that, no matter how charred a body may be, so long as a piece of intact lung tissue remains, the diagnosis of whether the burning took place during life can be made.—*Vrtljschr. f. gerichtl. Med.*, Berlin, 1905, Heft 1.

THE CATASTROPHE AT THE METROPOLITAN RAILWAY IN PARIS.

VIBERT (*Ann. d'hyg.*, Paris, 1905, March) gives an account of the terrible calamity which occurred in the Paris underground railway in August 1903. The circumstances were peculiar, inasmuch as the chief loss of life did not occur at the station where the burning train was drawn up, but at the next station, about a quarter of a mile away. Here a large number of people, some of whom were passengers waiting for a train, and some who had been attracted out of curiosity to see the conflagration, which was visible through the tunnel, were enveloped in a dense cloud of smoke and gases of combustion which suddenly burst upon them from the tunnel.

A few managed to escape by the exits, but sixty-seven bodies were found huddled together on the platform next day, when the atmosphere had become pure enough to permit of access to the station.

Vibert examined the bodies, and found that all the victims had succumbed to carbon monoxide suffocation.

All the bodies, with the exception of four, presented patches of pink coloration of the skin, such as is usually seen in cases of poisoning by this gas. This coloration was, as a rule, best marked on the face, but was also seen in other situations as well as in those parts which were the seat of hypostatic lividity.

The examination of the blood gave the characteristic reactions of CO-hæmoglobin, even in those cases in which the external appearances were not distinctive.

The majority of the bodies were covered with a thick layer of soot, which at first sight gave the impression that they had been charred by the action of fire. In about a dozen cases Vibert found superficial burns of the hands and faces, apparently produced by the action of steam or hot water, though how this could have occurred under the circumstances he was unable to explain.

A few bodies showed some slight contusions or bruises, received no doubt by falling or during the struggle to reach the exit stairs, but the majority were quite free from injuries of any sort, a fact which is probably to be explained by the rapidity with which death, or at any rate unconsciousness, ensued. Amongst those who escaped, interesting sequelæ developed, some attributable to CO-poisoning, some to inhalation of soot and smoke, and others to shock of the nervous system.

DISEASES OF THE EYE.

UNDER THE CHARGE OF
GEORGE A. BERRY, M.B., F.R.C.S.Ed.,
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The Antitoxic Action of the Tears.

There has long been an impression in the minds of some that the lachrymal secretion possesses definite virtue as an antiseptic, in spite of the well-known fact that the conjunctival sac practically always contains some germs, it may be many or it may be few. Certain organisms appear to find the conjunctiva a very convenient place in which to flourish, and among these may be mentioned the gonococcus, the bacillus of Koch and Weeks, and that of Morax and Axenfeld. But, on the other hand, diphtheria of the conjunctiva is a rare disease, and may be quite mild when it does occur. Is there any germicidal power in the tears which is capable of destroying the activity of the Klebs-Löffler bacillus, then? In the first place, on the general question of the antiseptic action of the tears on any organisms, it has been practically decided by the investigations conducted by a number of observers, that if there is any at all it is very slight, and that their mechanical cleansing action is (so far as this matter is concerned) their chief virtue: it is not impossible, also, that they impair the vitality of the organism and prevent its growth without actually destroying it, and it is also possible that they have some influence upon the toxins produced. To turn again to the special question of the diphtheria bacillus, Demaria, who writes on this subject, was not the first by any means to investigate it: others have shown, by mixing a definite quantity of tears with virulent bacilli, that their activity was not reduced, nor was their number diminished. Others again have shown, however, that if lachrymal secretion was injected into a guinea-pig at the same time as a lethal dose of diphtheria bacillus, the animal died; but that if the tears and the toxin were kept in contact for a considerable time, say for six hours, before injection, the animal escaped: this result they thought might be attributed to some chemical action upon the toxin. In Demaria's own work he employed toxins rather than the living organisms, as he was thus in a position more accurately to regulate the dose. He found that if tears and toxin were mixed and injected, the animal upon which the experiment was made (guinea-pig) died, even when the tears were obtained from a person immunised against diphtheria, or from one who was just recovering from faucial diphtheria. It has been asserted by

Wassermann that an antitoxic body can be obtained from the blood of any one but a new-born child, and if this be so some of it might not improbably be present in the tears, but Demaria's conclusions seem to be clearly in contravention of such a contention. We come again, then, to the result that it is only by its mechanical cleansing power that the lachrymal secretion gives us protection against germ infection.—*Klin. Monatsbl. f. Augenh.*, 1904, September.

ALTERNATING MYDRIASIS.

WHEN the pupils are unequal, the inequality may be constant or variable; when this is variable, it is sometimes the case that the pupil which at one time is the smaller at another is the larger: it is this condition with which Frenkel (of Toulouse) deals in a valuable paper, and which he calls *Mydriase à bascule.* He deals with it as it occurs in disease, from disturbance of function, and in health. First, as it occurs in disease, it is in cases of general paralysis that the symptom is most frequently observed, and here the alternations may take place in a few days, or even a few hours. It is further of great importance, from a clinical point of view, to know that the symptom may be present for years before other and more unequivocal manifestations can be made out. In other mental disorders it may occur also, and be both as variable and as rapid as in general paralysis. In locomotor ataxia it has certainly been observed, and there are cases on record also, though not by any means so unassailable, of insular sclerosis and hydrocephalus, chronic cervical myelitis and infantile (cerebral) paralysis, in which it has been noted. Under the head of the cases due to disturbance of function, Frenkel places those examples in which there appears to have been some affection, organic or otherwise, which by a reflex path effects dilatation now of one pupil, now of the other. This very obscure condition has been observed in the course of a number of diseases—in pneumonia, peritonitis, enteric fever, and nephritis among others, to say nothing of Graves' disease and hysteria. In health, in the third place, it appears that alternating mydriasis may occur, but obviously such would necessarily be regarded with some suspicion. It should further be remembered that errors in observation may very readily occur.—*Arch. d'opht.*, Paris, tome xxiv. pp. 9 and 10.

THE FIELDS OF VISION.

THERE is much to be learned from the examination of the fields of vision, not merely in cases of more purely ophthalmological interest, but in others as well, and an article by Wolffberg in the *American Archives of Ophthalmology* gives a review of the matter worthy of careful study. He states that a field of vision must be regarded as normal only if it extends to the recognised limits for a given size of test object, and if it suffers no reduction with the diminution of light until that diminution is carried so far that the fixation object becomes invisible. Since the lighting question is thus of considerable importance, it is needful to have some convenient and rapid method of photometry, for which purpose he suggests a plan of which he has found the advantage, and which is certainly very simple. He has had constructed a test card in which the background is black and the letters blue: in good light one can read $\frac{6}{6}$ on this card, but if the general illumination be reduced until on the ordinary scale $\frac{6}{6}$ is just barely visible, one can only read $\frac{5}{30}$ on this special card. We have thus a very handy means of checking the results of perimetry, as affected by diminution of illumination, and therefore by activity in the chemical changes.

The field has for a long time now been known to be reduced in fatigue in a singular manner, for if the circuit of the field with the test object be made more than once, the line drawn uniting the points of disappearance will trace out a spiral, which may resemble a watch-spring or snail shell; and Reuss has the merit of showing that this influence of fatigue is exerted on the psyche and not merely on the retina: he showed that if this symptom be presented in the right eye, while the left eye is kept covered, and the left be then immediately uncovered and tested, its field will be found to be very small: the fatigue effect must therefore be not retinal but psychical.

It has been observed that when the illumination is reduced, this "tells" more upon the field for blue than it does upon that for red or for green: perception of blue must therefore depend more upon the activity of the neurochemical process, that for red more upon the vigour of the neuroptic apparatus. In lesions of the neuroptic apparatus (*e.g.* optic atrophy) the sequence of colour fields is never altered, while in lesions of the photochemical apparatus (*e.g.* idiopathic night blindness) perception of red may exceed perception of blue all over the field, provided the illumination is sufficiently reduced.

Wolffberg confirms an observation made long ago, on the importance of which it is hardly possible to insist too much: in cases of optic atrophy, if the fields for colours are large relatively to that for white, the condition will be (approximately) stationary, while if the fields for colours are seriously contracted, and yet that for white remains comparatively large, the prognosis is very grave; the loss of vision will be somewhat rapidly progressive.—*Arch. Ophth.*, N.Y., vol. xxxiii. p. 6.

REPORTS OF THE MEDICAL SOCIETIES.

Edinburgh Medico-Chirurgical Society.—*May* 3, 1905.—Professor Chiene, C.B., President, in the chair.—Dr. Bramwell showed—(1) A case of leukæmia treated by the X-rays; (2) a case of chronic gout.—Mr. Cotterill showed a case of multiple chondroma and chondrosarcoma.—Mr. Alexis Thomson showed a case of extroversion of the bladder after transplantation of the ureters into the rectum (Peters' operation).—Dr. William Stewart and Mr. Cotterill showed card specimens.—Dr. J. V. Paterson and Edwin Bramwell read a paper on "Two Cases of Word-Blindness." The cortical speech centres and their relationships were first described, and reference was made to various types of word-blindness, and the seat of the lesion in each. The cases were next described. In the first, a man, æt. 63, who had suffered from a right hemiplegia some three months before he was examined by the writers, it was noted that the muscular paralysis had been largely recovered from, and tactile sensation was unimpaired. Speech was unaffected, but there was complete word and almost complete letter blindness. There was also right homonymous hemianopsia. The lesion was probably one of the post-cerebral artery affecting the angular gyrus and the occipital lobe. In the second case, the symptoms were practically identical with the foregoing. This patient, however, died of bronchitis and cirrhotic Bright's disease, and a post-mortem examination revealed an old softening of the occipital lobe corresponding to the distribution of the left middle cerebral artery. The angular gyrus was intact. The paper was illustrated by lantern slides.—Dr. Thomas W. Dewar (Dunblane) read a paper entitled "A Plea for the Recognition of the Treatment of Disease by Intravenous Injection." This method was first suggested some centuries ago by Christopher Wren. Dr. Dewar had used the method with success in a case of streptococcal poisoning in which repeated doses of anti-streptococcic serum had done no good. An intravenous injection of formaldehyde in salt solution produced an immediate fall of temperature, and the patient recovered. A similar result followed intravenous injection of pilocarpin in a case of eclampsia. Dr. Dewar's main experience of the method had been derived from treatment of cases of phthisis by the injection of iodoform dissolved in ether. Of nine severe cases so treated, five are free from tubercle, and four are doing well. The treatment must be persisted in for several weeks before any definite results can be hoped for, and he warned the members not to draw hasty conclusions from a trial of the method which did not extend over a period of three or four months at least. The paper was discussed by several speakers, most of whom were of opinion that the method was of little value in the treatment of phthisis.

May 17, 1905.—Clinical Meeting in the Sick Children's Hospital, Dr. Affleck, Vice-President, in the chair.—Dr. John Thomson showed—(1) A case of Still's type of chronic disease of the joints associated with enlargement of the lymphatic glands; (2) a child showing various rickety deformities.—Dr. Burn Murdoch showed—(1) An obscure nervous case;

(2) a case of purpura with febrile symptoms and profound anæmia; (3) a case of pyloric constriction; (4) a case of aggravated nasal obstruction in an infant; (5) a case of cubitus varus.—Mr. Stiles showed—(1) Three cases of chronic hydrocephalus, to illustrate the effect of treatment by ligature of both common carotid arteries; (2) a boy with organic stricture of the œsophagus due to swallowing caustic potash: gastrostomy was required owing to superadded spasmodic closure; (3) a case illustrating some points in the operative treatment of paralytic obstruction following acute suppurative peritonitis; (4) a case in which a large multilocular cystic hygroma of the neck spontaneously disappeared.—Mr. E. S. Carmichael showed—(1) A boy, æt. 11½ years, after acute perforative appendicitis with general peritonitis; (2) a baby 10 weeks old after excision of spina bifida; (3) two children after resection of the ulna for tuberculous osteomyelitis; (4) a child after operation for tuberculous disease of the frontal bone.—Dr. Sinclair (for Dr. Drummond) showed a boy, æt. 5 years, with interstitial keratitis. — Mr. Stiles showed various specimens and photographs.—Mr. E. S. Carmichael showed—(1) Encysted hydrocele of cord; (2) hernial sac and encysted hydrocele of cord; (3) stomach after posterior gastro-enterostomy in child, æt. 5 weeks, with congenital pyloric stenosis; (4) appendix vermiformis and polypus growing into lumen; (5) tibia five weeks after resection for osteomyelitis, showing formation of new bone; (6) tibia, lower two-thirds, resected for acute osteomyelitis; (7) upper end of ulna resected for tuberculous disease.

Edinburgh Obstetrical Society.—*May* 10, 1905.—Dr. Brewis, President, in the chair.—Dr. Fordyce showed for Dr. Barbour two large malignant ovaries. The exact nature of the tumours had not yet been determined by the pathologists.—Dr. Haultain showed—(*a*) Uterus, the seat of a large calcareous fibroid, in which acute axial rotation had taken place; (*b*) a chronic twist of the pedicle of an ovary showing infarction; (*c*) chronic twist of a dermoid ovarian tumour; (*d*) a cyclops fœtus; (*e*) œdematous intra-ligamentary fibromyoma; (*f*) two placentæ with velamentous insertion of the cord.—Dr. Fordyce showed a degenerating fibroid removed by hysterectomy four and a half weeks after full-time labour. The tumour had become much less since the labour, but as it was giving rise to urgent symptoms, it was removed.—Dr. Lamond Lackie showed a fibroid tumour removed by hysterectomy. The patient had her second child eight months ago, when it was only the size of a hen's egg. The tumour had grown rapidly, as before operation it was the size of a five months' pregnancy. It proved very soft and vascular. — Dr. Barbour Simpson showed for Professor Simpson a fibroid tumour of the uterus, with cystic degeneration of both ovaries. — Sir Halliday Croom read a paper on "Some Curiosities of Curetting." He first of all discussed some considerations concerning cancer, generally with special reference to the etiology. He did not believe in the organismal theory of cancer. He pointed out the importance of having every scraping removed from the uterus examined microscopically; and further, he thought it only fair to the pathologists that the surgeon should give a short history of the case and of the symptoms before expecting an opinion. Sir Halliday then referred to some possible mistakes made by the microscope, and gave illustrations of cases in which an opinion of cancer had been given, and in which the cases proved to be non-malignant. On the other hand, as the result of microscopic examination, he had repeatedly been able to remove a malignant uterus early in the course of the disease, when he did not suspect cancer at all. Sir Halliday, in conclusion, mentioned some accidents of curetting with special reference to perforation; this accident, as a rule, did no harm.

Glasgow Medico-Chirurgical Society.—*May* 5, 1905.—Dr. John W. Findlay and Dr. J. R. Riddel showed a girl, æt. 9 years, the subject of congenital syphilis, and presenting multiple disease of the joints closely simulating the features of rheumatoid arthritis. Skiagrams were also shown which demonstrated that the disease was confined to the synovial membrane. The pain slowly disappeared under treatment by high frequency currents, and the swelling rapidly subsided after mercury had been administered.—In the absence of Dr. Moyes, Dr. R. M. Buchanan read notes of and showed specimens from a case of malignant endocarditis of sudden onset and rapid course, with head symptoms and purpuric rash. Post-mortem examination revealed an ulcerating vegetation on the mitral valve. The aortic valve and the coronary arteries were atheromatous. The capillaries of the heart muscle were blocked with staphylococci. In the thoracic and abdominal viscera were many minute abscesses and hæmorrhages. No visible source of the infective process was found.—Dr. Edington showed a specimen of congenital occlusion of the small intestine. The large bowel was about the thickness of the adult ureter. There was a well-formed anus, and a catheter passed about 2½ inches into the rectum.—Dr. W. K. Hunter showed a specimen of the "Leishman-Donovan body," sent him by Captain George Lamb, I.M.S., from a case of splenomegaly.

Glasgow Pathological and Clinical Society.—*May* 8, 1905.—The President, Professor R. Muir, in the chair.—Dr. J. Walker Downie showed a thyroglossal cyst and a simple thyroid cyst removed from the same patient. Microscopic sections were shown by Dr. Teacher.—Dr. Teacher read for Dr. W. L. Reid the history of a large solid tumour of the ovary, and demonstrated the tumour and sections prepared from it. The patient was æt. 83; the tumour was noticed five and a half years ago. Operation was undertaken on account of rapid increase of the growth and the development of ascites within the last six months. The patient made an excellent recovery. The tumour weighed 16 lb. 2 oz. Part of it showed the structure of a hard fibroma, but the larger portion that of a spindle-celled sarcoma.—Dr. J. G. Connal read notes of and showed sections from a case of epithelioma of the external auditory meatus. The patient was an old man. Radical operation was out of the question, and patient returned home, where he died somewhat unexpectedly, with symptoms suggestive of septic mischief within the cranium. A remarkable feature was the absence of pain. Sections of material removed for diagnosis showed the structure of squamous epithelioma.

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